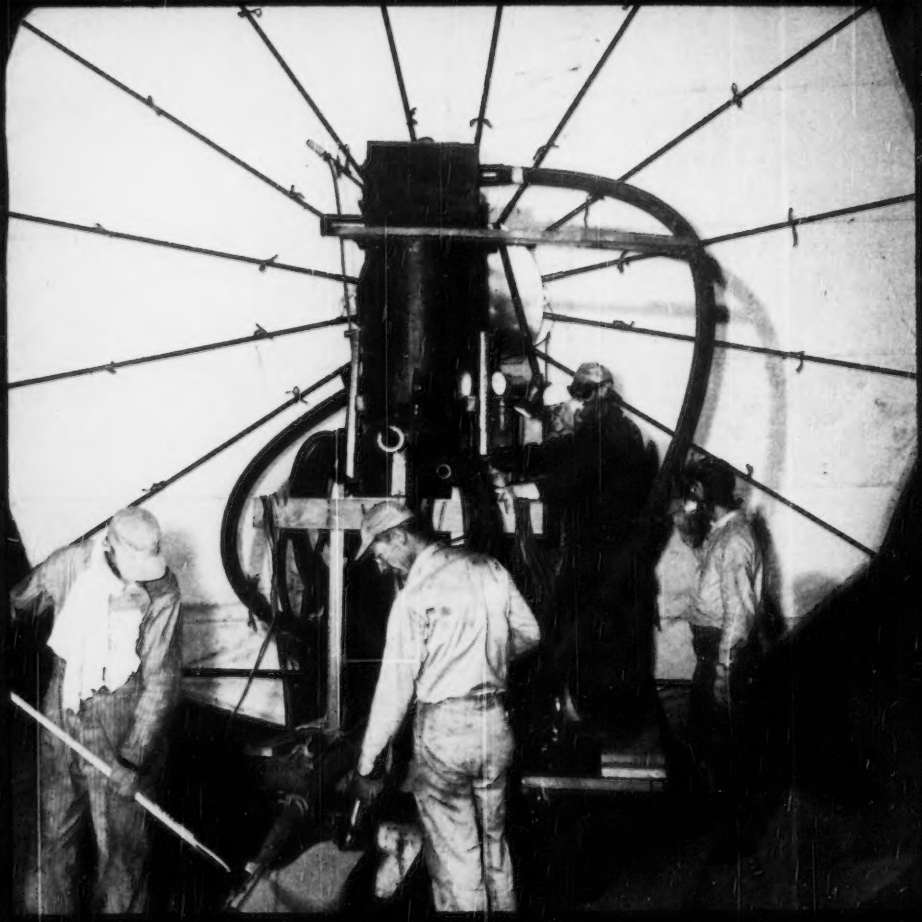
ENGINEERING NEWS-RECORD



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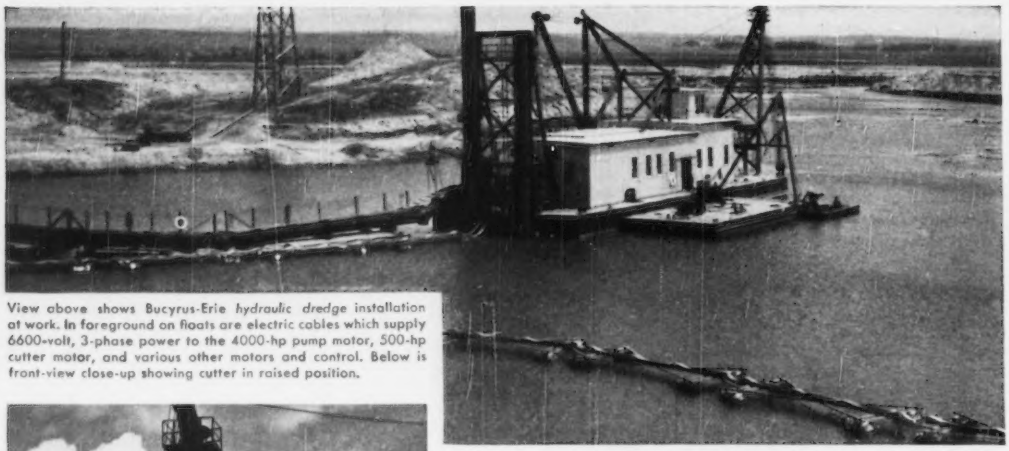
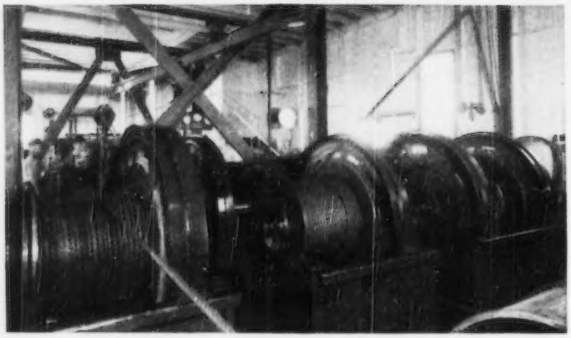


View above shows Bucyrus-Erie *hydraulic dredge* installation at work. In foreground on floats are electric cables which supply 6600-volt, 3-phase power to the 4000-hp pump motor, 500-hp cutter motor, and various other motors and control. Below is front-view close-up showing cutter in raised position.



Inside, these hoist cable drums are driven by G-E motors. After ten years of rough duty, this fully electrified dredge continues to give top performance for its owners.

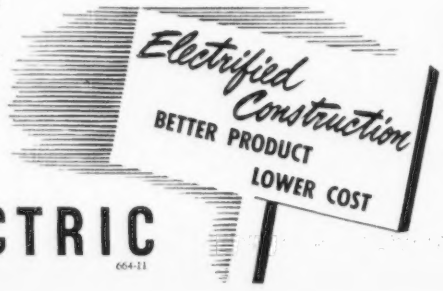
Vacuum-cleaning RIVERS ... *Electrically*

This electrically driven hydraulic dredge is a pretty rugged looking "vacuum cleaner." But biting-into and sucking-up river bottoms is a rugged job—though it does require accurate control. That's why Bucyrus-Erie uses *electric drives* in most dredge installations.

Electrified construction equipment is being used more and more to handle difficult jobs—jobs that require smooth, completely dependable operation. With G-E power distribution systems supplying the voltage and G-E motors and control driving your equipment, you are assured of all the benefits of electrification plus G-E engineering assistance in application, installation, and service—wherever the job may be. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.



GENERAL ELECTRIC

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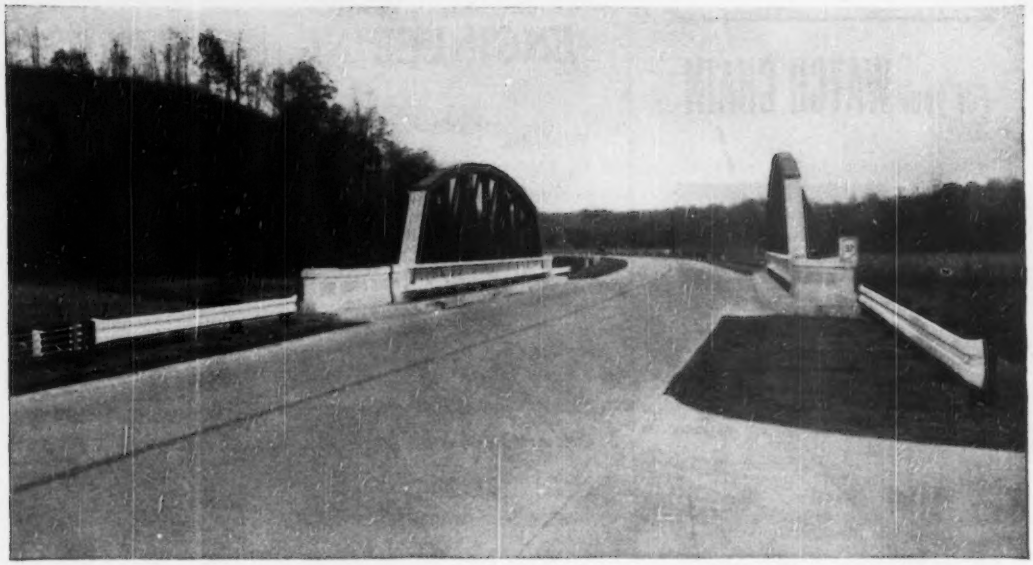

Bethlehem Safety-Beam Guard Rail at bridge approach on Route 37, between Martinsville and Bloomington, Indiana. Contractors: William D. Vogel, Indianapolis, and Rieth Riley Construction Co., Goshen, Ind.; Guard Rail Erector: James H. Drew Corp., Indianapolis.

For Extra Protection Use Safety-Beam

To provide extra protection for motorists, use Bethlehem Safety-Beam Guard Rail at sharp turns, embankments, bridge approaches and other dangerous locations along highways.

Bethlehem Safety-Beam Guard Rail provides maximum safety at highway danger points for two reasons: (1) strength, and (2) ability to absorb impact. Safety-Beam consists of heavy sections of steel plates, bolted together on steel posts to form a continuous, impact-absorbing beam. When a vehicle strikes Safety-Beam, impact is absorbed by several posts, making it virtually impossible to crash through the rail.

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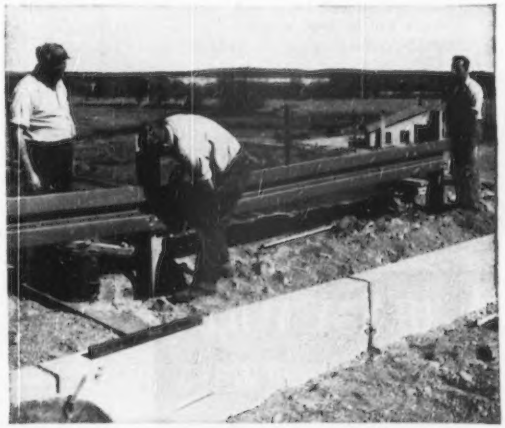
Our Folder 545 gives standard details and assembly plans for Safety-Beam Guard Rail. For your copy, contact the nearest Bethlehem sales office. Or get in touch with us at Bethlehem, Pa.



Fastening Safety-Beam Guard Rail to Bethlehem steel post on Route 3 by-pass, in vicinity of Concord, N. H. Contractor: Peter Salvucci, Waltham, Mass.; Guard Rail Erector: Costantino Bros., Inc., Providence, R. I.

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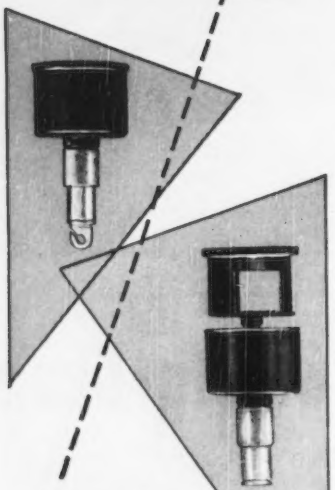

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ENGINEERING NEWS-RECORD

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Volume 145 SEPTEMBER 7, 1950 No. 10

WALDO G. BOWMAN
Editor

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Number of copies of this issue printed 45,098

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Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.
Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City, *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

September 7, 1950 ENGINEERING NEWS-RECORD Vol. 145—No. 10

Publication Office—99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

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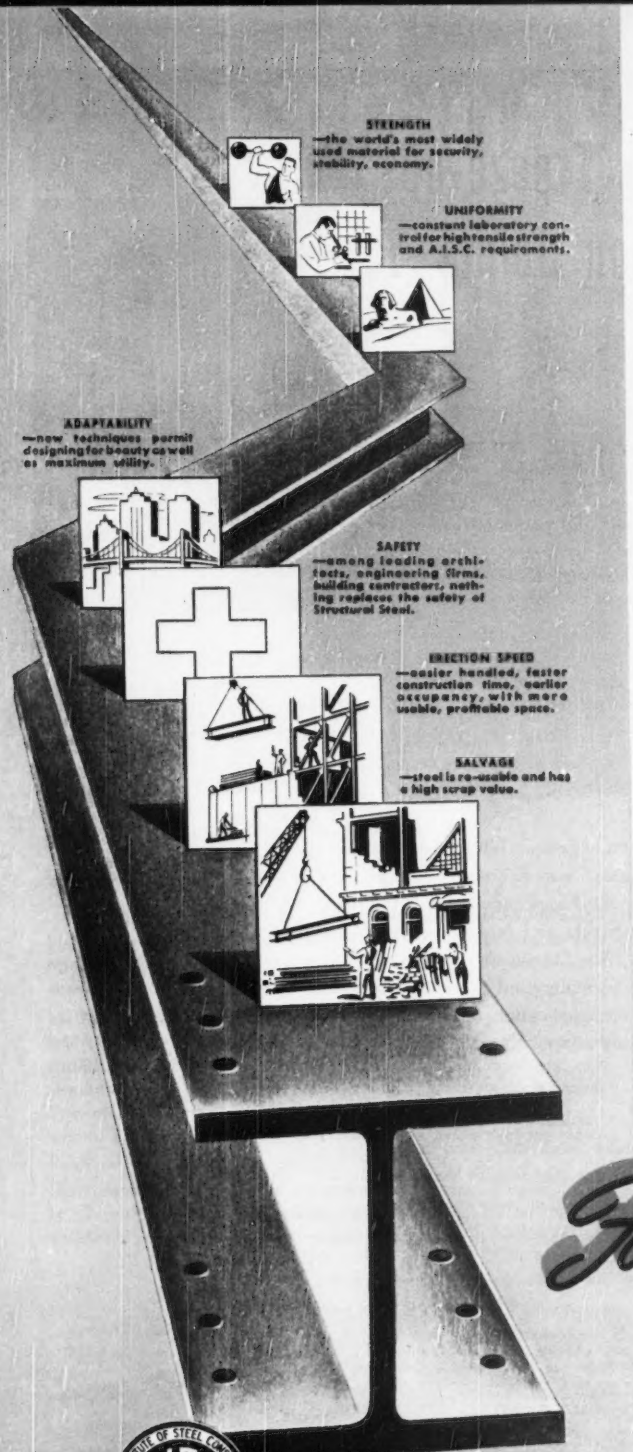
Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.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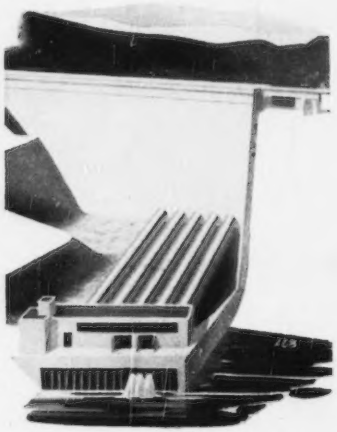
Preventing Corrosion "Freeze-ups" in Penstock Expansion Joints . . .



PROJECT: *To provide, with practical economy and low maintenance, safe transfer of water to power house at Shasta Dam—a distance of some 835 feet—with allowance for expansion and contraction and to withstand temperature variation under all climatic and water conditions.*

DESIGN: *Five steel penstock lines with free-moving sliding expansion joints having inner sleeves of Lukens Nickel-Clad Steel. Smooth, work-polishing nickel surfaces to permit freedom of motion and resist corrosion and cavitation. Steel backing to provide strength and rigidity.*

END RESULT: *Six years of safe, trouble-free service. No corrosion "freeze-ups"; no buckling of lines regardless of weather. Minimum of inner sleeve maintenance.*

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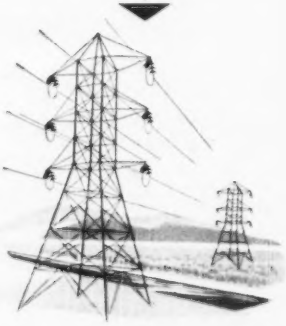

The expansion joints of penstock lines at Shasta Dam were designed and fabricated by Chicago Bridge and Iron Company for the U. S. Bureau of Reclamation. Lukens Nickel-Clad Steel was used for the inner sleeves.

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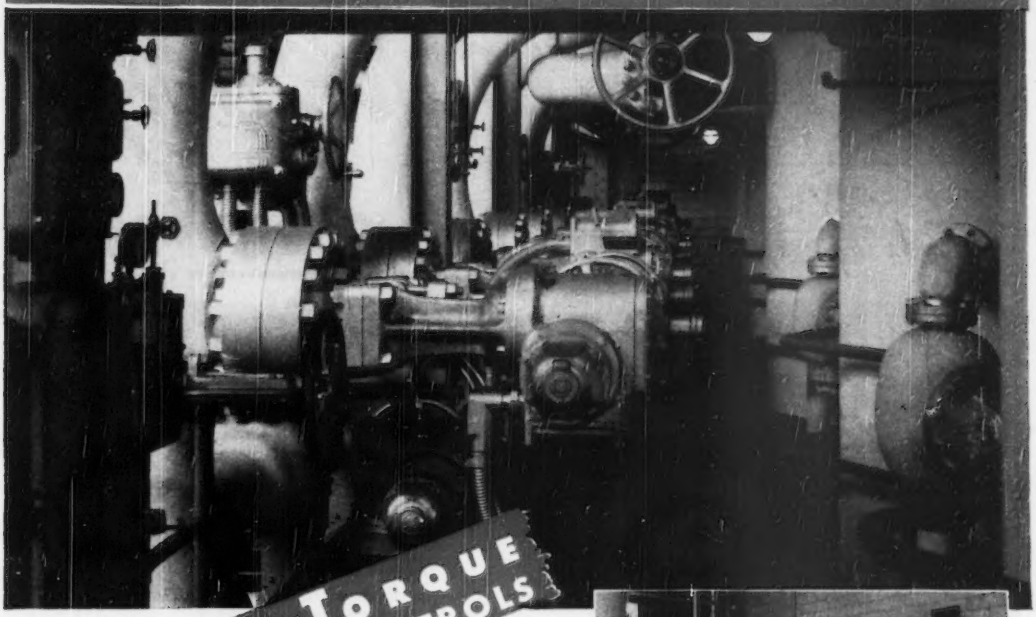

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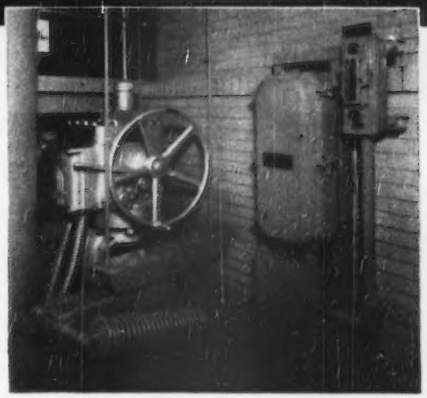

Upper: LimiTorque Control on 1750 lb. feed water valves at heaters.

Lower: LimiTorque Control on a King valve with reversing control and push button station.

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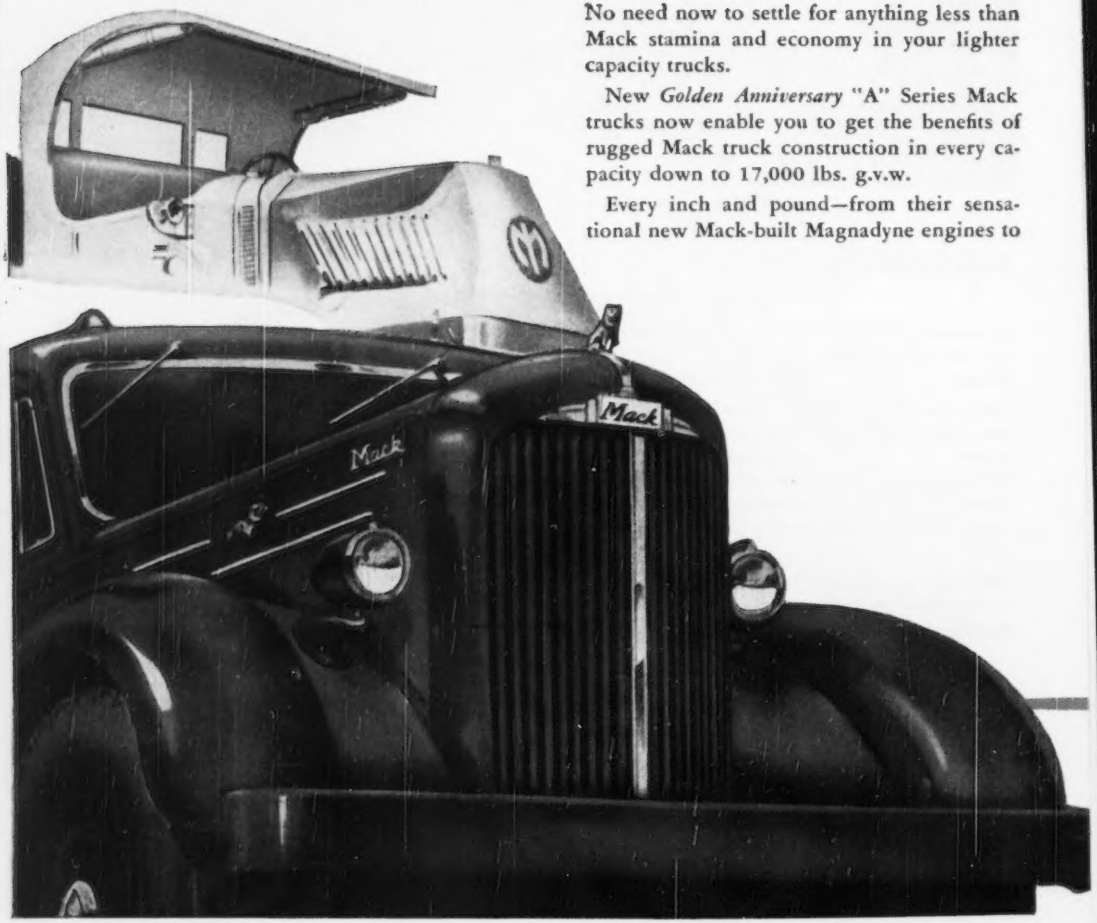

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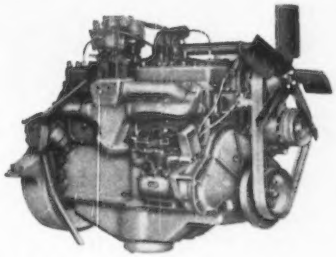

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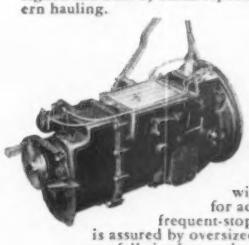

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NEWS BRIEFS

Quake-proof building—The first "earthquake-proof" building in Alaska, the new Geophysical Institute at the University of Alaska in Fairbanks will be completed early this fall at a cost of nearly $1,000,000. It has been built to withstand an earthquake of intensity 9.

Lease-purchase plan—Alameda County plans to sponsor a bill at next year's session of the California legislature to allow counties to enter into lease-purchase agreements with private companies for construction of public buildings. A recent state supreme court decision approved a new law permitting the state and cities to make such arrangements. The proposed legislation would merely expand the law to include counties. Under the law the state or cities may agree to lease buildings constructed for them by private companies. After a given rental period, the government agency assumes ownership of the building.

Another toll bridge—The North Omaha, Neb., Bridge Association has named the firm of Harrington & Cortelyou, Kansas City, Mo., as their consulting engineers on the $2,000,000 bridge over the Missouri River on the north side of Omaha. This bridge will be financed by revenue bonds and be a toll bridge. At this time there are two free bridges at Omaha over the same river, a toll bridge at Plattsmouth, Neb., some 40 miles south of Omaha, a toll bridge at Blair, Neb., 20 miles north of Omaha, and now under construction another bridge at Decatur, Neb., 40 miles north of Omaha.

Saving Niagara—The "horseshoe" is to be removed from the Canadian Falls at Niagara Falls. This is necessary if the cataract is to be preserved for posterity. Erosion is wearing away the center of the falls much faster than the two flanks, the center retreating upstream about 4 ft a year. The Canadian government plans to spend $700,000 building a series of submerged dams and shearing-off shelves on the shoulders of the falls to relieve pressure on the center by forcing more of the water to pass over the falls at the two flanks.

Unpopular tax—A 4 percent sales tax recently imposed by the province of New Brunswick, Canada, seems especially objectionable to building interests. It has affected building and re

(Continued on page 13)

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pairing operations and sales of building materials. The tax was levied over an avalanche of protests by contractors, engineers and organizations covering the construction industry and trades. Hospital boards planning erection of new buildings are seeking to obtain suspension of the tax on building supplies bought for such projects.

People must eat—Governor Paul Dever of Massachusetts has signed a bill creating the Massachusetts Market Authority to build and maintain a $14,000,000 central meat and produce market in the Boston area for handling fresh foods. The authority will be composed of four members to be appointed by the governor, one by Mayor Hynes of Boston, and the others will be the city director of markets and the state commissioner of agriculture. The new terminal will replace facilities in the Faneuil Hall district, a highly congested section. The authority is empowered to issue its own revenue bonds to finance the project.

Priorities wanted—The Oklahoma Turnpike Authority will not complete its sale of $31 millions in toll road bonds until after the project is assured priorities for materials, Governor Roy Turner has announced. He said it had been agreed between the authority and the bond buyers to delay closing the transaction until the priority situation as cleared up. "As soon as that is obtained I will go to Washington and push our application for priorities," he said. Preliminary engineering work will continue on the project.

Save water—So acute has the water shortage become in Massachusetts, especially in the farm areas, that the Essex County Agricultural School is considering a course for farmers in pond construction, irrigation and water conservation. Developing greater water supplies is likely to be one of the important issues of the 1951 session of the Massachusetts Legislature, as well as those of other New England states. Maine has suffered greatly from drought in this and previous summers.

THE COVER

Four arms revolve behind the cloth "spider-web" shield, blowing sand on the interior of the 22-ft dia steel-lined concrete pipe that is the huge Soap Lake Siphon of the Columbia Basin Project. (ENR Dec. 22, p. 36).

The shield and its sandblasting equipment move at a speed of about five inches per minute. (Bureau of Reclamation photo).

YOU CAN BE SURE OF UNIFORM

Quality

IN BRIGGS & STRATTON ENGINES

The most modern machines and tools for volume production with watch-like precision (many of them developed by Briggs & Stratton engineers), plus constant check and rigid inspection, are used to maintain uniform quality to meet the high exacting standards established by Briggs & Stratton — the result of the engineering and manufacturing experience gained in more than 32 years of continuous production, and the building of more than 4¾ million single-cylinder, 4-cycle, air-cooled gasoline engines.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wis., U. S. A.

World Wide FACTORY SUPERVISED SERVICE

Flywheel Power FOR INDUSTRIAL CONSTRUCTION RAILROAD AND FARM EQUIPMENT

4 CYCLE BRIGGS & STRATTON GASOLINE ENGINES

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

Break That

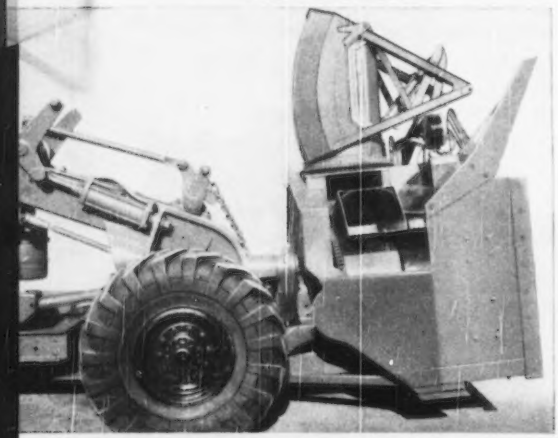
with this POWERHOUSE Combination

Austin-Western
SICARD

Engine, radiator, clutch and batteries for the Snow Master are mounted beneath the arch of the grader frame, and can be quickly and easily removed as a unit.

AUSTIN-WESTERN

All-Wheel Drive and Steer Power Grader with SICARD Snow Master Rotary Snow Plow



Close-up of Sicard Snow Master in raised position, with blower housing revolved for casting to the right. The Sicard unit can be quickly removed from the front end of the grader.

Wherever there's a tough problem—freeing country roads from a smothering blanket of snow, loading trucks to capacity in crowded business districts, or cleaning streets right to the curb in closely built residential areas—this outfit has what it takes. Sicard Snow Master, with its powerful blower and exclusive patented "wrist action" chute for precision casting, backed by the power and drive of the Austin-Western Power Grader, with its exclusive All-Wheel Drive for maximum traction and *front end* control, and exclusive All-Wheel Steer for maximum maneuverability and *rear end* control.

This is no *single season, single purpose* unit! The grader that drives the Sicard is the same Austin-Western machine that dominates the *grader* field 365 days a year on every type of work. Thus, there is no closed season for the outfit. Spring, summer and fall it's the last word in graders . . . when winter rolls around, it is ready in a few hours for the job of snow removal.

AUSTIN-WESTERN COMPANY
AURORA, ILLINOIS, U. S. A.

BLOCKADE!

Cutting through heavy, icy drifts in the Colorado "Rockies."

Power and steering control at all four wheels holds the grader steadily to its work in widening.

EXCLUSIVE FEATURES
Set New Performance Standards

The powerful rotary augers of the Sicard grind up compacted snow and ice, whirling it toward the throat of the blower. The exclusive, saw-tooth cutting table, separating the two sets of augers, prevents the snow cut by the upper augers from falling and choking the lower series. There's no bottleneck at the front end of the Sicard . . . each auger does its share of the work. Ice cutters can be quickly attached to the augers, when exceptionally difficult conditions are encountered.

The blower of the Snow Master has a casting range of up to 150 feet on either side, *plus* the exclusive, patented "wrist action" casting chute which is completely controllable.

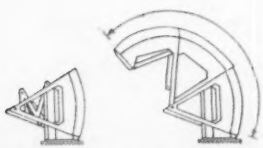
All-Wheel Drive provides the *front end* control which has been found so important on truck-mounted rotary plows. All-Wheel Steer provides—for the first time on any rotary—the short turning radius which is always advantageous, and the *rear end* control which is the only thing that will successfully resist the side draft that is always present when widening out.

Austin-Western and Snow Master—this is the combination to break the clutch of winter—to keep city streets and country highways clear for the rolling wheels of commerce.

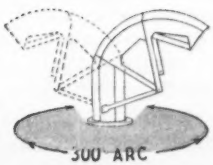
Complete directional control, with "wrist action" chute, makes it easy to load trucks from any angle.

The rotatable, telescopic chute puts the snow precisely where it's wanted. No broken windows . . . no clogged driveways.

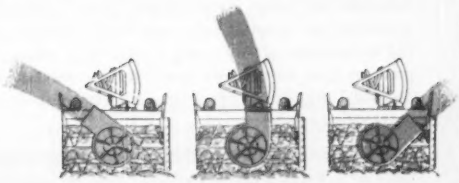
EFFORTLESS HYDRAULIC POWER MAKES ALL ADJUSTMENTS . . . INSTANTLY



Controls telescopic chute for long or short range casting.



Rotates chute in 300° arc for casting or loading to either side.



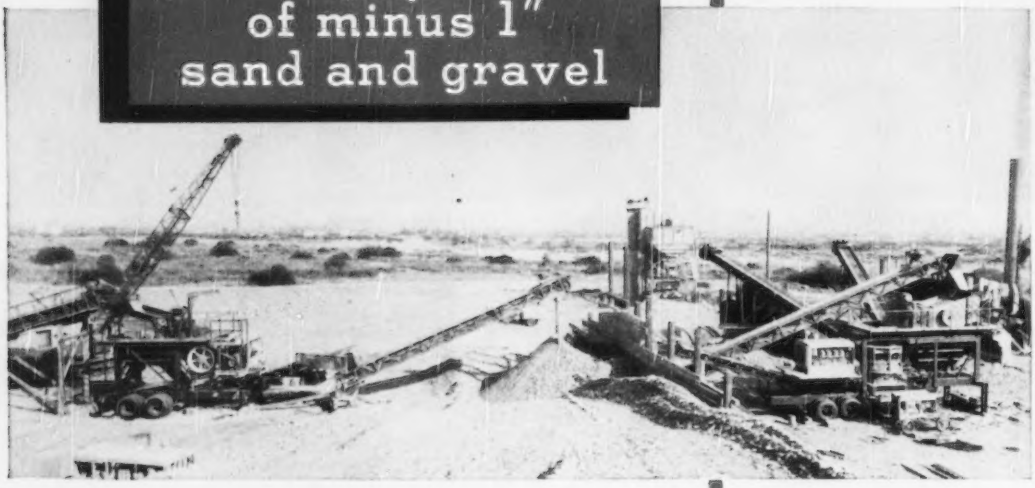
Rotates blower housing for direct casting to either side, or through chute.

BUILDERS OF ROAD MACHINERY SINCE 1880

Austin Western

Enormous Capacity
of minus 1" sand and gravel

● Morrison Knudsen Co. Telsmith 2-Unit Portable Crushing-Screening Plant near Ontario, California.



TELSMITH

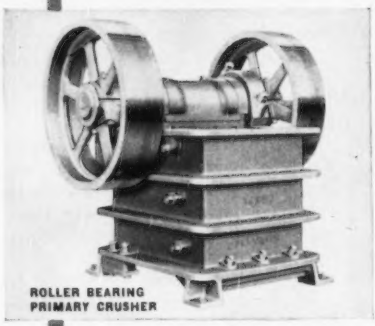
2-UNIT PORTABLE PLANT *with* Gyrasphere Secondary Crusher

● The MORRISON KNUDSEN CO. of Boise, Idaho, and California are producing about 275-300 tons per hour of minus 1-inch sand and gravel, for road building, with their Telsmith 2-Unit Portable Crushing-Screening Plant. Plant consists of . . .

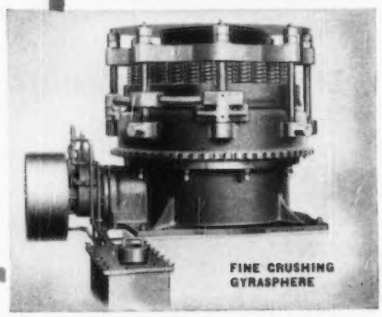
PRIMARY UNIT	SECONDARY UNIT
30" x 5'6" Plate Feeder	5' x 12' Triple Deck Sizing Screen
4' x 8' Double Deck Scalper	48" Gyrasphere Crusher
18" x 32" Roller Bearing Jaw Crusher	30" x 40' Plant Conveyor
30" x 25' Plant Conveyor	125 hp. Diesel Power Unit
105 hp. Diesel Power Unit	Five Feed and Stock-piling Conveyors

Primary Unit is taking pit run sand and gravel with 15" to 18" boulders, with the jaw crusher set at about 3". Material is then stock-piled, and fed to Secondary Unit, with Gyrasphere taking about 4" feed. Finished product goes to cement, and asphalt mixing plants. Here again, the Telsmith 2-Unit Portable Plant with Gyrasphere Crusher is giving remarkable capacities.

P-14



ROLLER BEARING PRIMARY CRUSHER



FINE CRUSHING GYRASPHERE

Consult TELSMITH Engineers . . . Send for Bulletin

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Rosholt Equipment Co. Minneapolis 6, & Duluth 7, Minn. · Empire Equipment Co. Sioux Falls & Rapid City, So. Dak. · Montana Powder & Eqpt. Co. Helena, Montana · Constructors Eqpt. Co. Denver 5, Colorado
General Machinery Co., Spokane 1, Wash. · Mussens Canada Limited, Montreal, P. Q.—Fredericton, N. B.—Toronto, Ont.

THE CONSTRUCTION WEEK

ANOTHER WAY—When a manufacturer of steel corn bins in Columbus, Neb., couldn't get delivery of 2,500 tons of light-gage steel from U. S. mills, he turned to the Belgian steel markets. And when all bills were in—including transatlantic freight, 15% import duty, river freight from New Orleans to Omaha, ship-to-rail handling charges at Omaha, and rail freight to Columbus—the total delivered price was less than Pittsburgh steel shipped by rail to the plant. The first two shipments of 500 and 700 tons have arrived, the rest is en route.

BOSTON GOES AHEAD—Despite threats of higher prices and material shortages, the Port of Boston Authority has no thought of curtailing its $20,000,000 pier construction program, authority heads have announced. With work already started on razing two of the old Mystic piers in Charlestown, the authority is pushing its plans for a new $5,500,000 ship terminal at the site. Other projects include a $7,500,000 pier on the East Boston side of the harbor.

LABOR GETTING SHORT—Evidence of a tightening in labor supply continues to pile up—but government officials (for the moment at least) are inclined to ascribe it to maldistribution, rather than actual shortage. Just the same there's this significant fact: New claims for unemployment insurance money dropped from 440,000 last January to 129,000 in mid-August. The Labor Department again is urging training within industry (it's included in a bill now before Congress) with the objective of developing a program for improving skills in non-apprentice jobs.

BRIDGE SCORE—Plans for engineering work overseas include two bridges—one interesting for its location, the other for its size. Notable for location (particularly in view of current misunderstandings about foreign policy) is one in Formosa. ECA has announced that it would advance the provincial government $1,000,000 for a bridge on the island stronghold. The bridge—a highway structure on piers built by the Japanese—will consist of 31 equal spans of 205 ft each—across the wide (and normally dry) mouth of the Cho-Sui-Chi River, near the town of Silo on the southeast coast of the island. J. G. White Engineering Corp. of New York is consultant, will soon ask bids for fabrication and design. Notable for size are plans for a 9,600-ft (between anchorages), 5,000-ft main span suspension structure to bridge the famed Straits of Messina between Italy and Sicily. The Milan Association for Steel Construction said it had engaged New York's D. B. Steinman to prepare studies of the proposed structure, which is planned to carry a railroad and a highway over the treacherous, 400-ft-deep strait (the site of the legendary Scylla and Charybdis).

IT'S A DATE—Contractors rushing work on the $85,000,000 Philadelphia extension of the Pennsylvania Turnpike were dated up last week, somewhat to their own confusion. "Matchmaker" was Turnpike Chairman T. J. Evans, who announced that the 100-mile extension would be opened Oct. 1, to coincide with the tenth anniversary of opening of the original section between Carlisle and Irwin. Contractors, some of whom are already pushing a 24-hr daily schedule, opined that perfect weather will be necessary if date is to be met.

SKIN DEEP—Steel work for the new Aluminum Company skyscraper in Pittsburgh will not emerge from the fabricating shop with the orthodox red lead or chrome paint job. The contract (with the American Bridge Co.) recognizes a special interest of the owner: The steel will be delivered for erection on the site with a coat of aluminum paint.

WAR EFFORT?—Insiders say the Bureau of Reclamation will ask funds for the next fiscal year for construction of a 33,000 kw power plant at Alcova Dam, in Wyoming. Completed in 1938 as a part of the Casper-Alcova irrigation project, the dam included no generating facilities. Bureau engineers say two 16,500-kw units could be installed in three years, at a cost of $6,377,000.

STOCK IN TRADE—To aid in financing its huge construction program of sewage treatment facilities, the Allegheny County, Pa., Sanitary Authority is looking into the possibility of buying revenue-producing waterworks. A private utility serving South Pittsburgh, for example, is quietly being scrutinized, and some thought is being given to the municipally-owned Pittsburgh water system. The reasoning: As owner of these utilities, the Authority could simplify collection of sewer service charges along with water rents; its managerial and engineering staff could handle the added utilities without expansion, thus making for economy.

BLACK MARKET, AGAIN—With housing construction slowing down due to reported shortages in cement and composition wallboard, Dallas, Tex., reported the reappearance of active black markets in both materials. Builders say (privately) that they can get all the portland cement and wallboard they want—at a premium of 68 cents a sack of cement and 50% above market price for wallboard.

WALLACE & TIERNAN CHLORINATORS *are*

Standouts in any Plan

AN OIL REFINERY IN TEXAS needs cooling water chlorination.

A PAPER MILL IN WISCONSIN requires white water slime control.

A SWIMMING POOL IN CALIFORNIA wants chlorination to guard against water-borne disease.

A SEWAGE PLANT IN INDIANA needs chlorination for disinfection.

A CAMP IN VERMONT wants to sterilize its well supply.

A POWER STATION IN FLORIDA asks for chlorination to improve heat transfer in condensers.

Whenever and wherever the plans call for chlorination, Wallace & Tiernan Equipment stands out as the first choice of engineers and architects all over the country.

The reasons for this preference aren't hard to find because smart buyers know that with Wallace & Tiernan Equipment they get:

WIDE SELECTION—Wallace & Tiernan Chlorinators and Hypochlorinators come in a variety of models and sizes handling from ounces up to 3 tons of chlorine daily.

PROVEN EQUIPMENT—Manufactured in a modern, precision-conscious plant, every piece of Wallace & Tiernan equipment is thoroughly tested (before leaving the factory) for the actual job conditions under which it will operate.

EXPERT DESIGN—All Wallace & Tiernan equipment is the product of expert development by a top notch research group specializing in chlorine and chemical control equipment. This is the same group that has pioneered such famous developments as the Visible Vacuum Principle, Break-Point Chlorination, and Residual Recording during the last 35 years.

SERVICE—Wallace & Tiernan's nationwide service organization is ready to solve bacteria-induced water treatment problems, whatever they may be.

Call your nearest Wallace & Tiernan Representative for your next job involving chlorination. He will be glad to help you.

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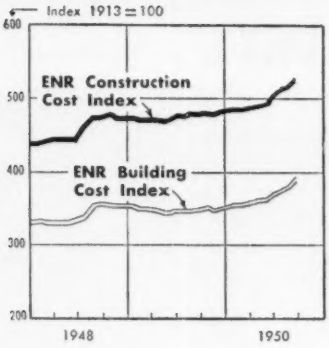
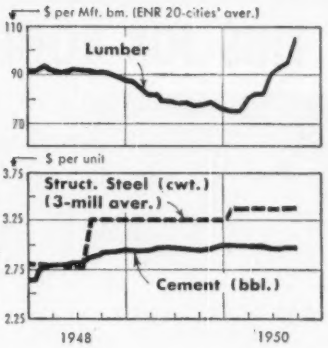
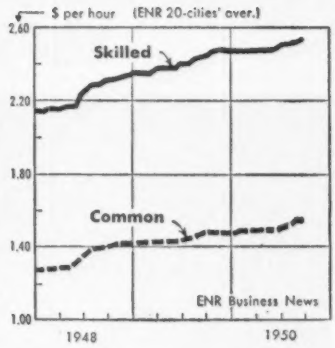
S-60

SEPTEMBER CONSTRUCTION BUSINESS REPORT







ENR INDEXES (1913 = 100)	Sept. '50	Aug. '50	% Change	Sept. '49	% Change
Construction Cost	530.37	521.36#	+ 1.7	479.78	+10.5
Building Cost	392.81	383.12#	+ 2.5	351.98	+11.6
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	2.976	2.971	+ 0.1	2.949	+ 0.9
Structural Steel, (3-mill aver.), per cwt	3.400	3.400	0.0	3.250	+ 4.6
Sand, per ton	1.976	1.970	+ 0.3	1.981	− 0.3
Lumber, 2x4 Fir, per M ft. bm	114.094	107.471#	+ 6.1	85.544	+33.4
Lumber, 2x4 Pine, M ft. bm	99.417	89.387	+11.2	74.259	+33.9
Common brick, per M	28.875	28.775	+ 0.3	27.763	+ 4.0
Ready-mixed concrete, per c. y	10.450	10.411	+ 0.4	10.287	+ 1.6
Structural Clay Tile, 3x12x12 per M	134.900	134.033	+ 0.6	132.810	+ 1.6
WAGE RATES (20-cities' average)					
Common	1.561	1.561	0.0	1.478	+ 5.6
Skilled (aver. 3 trades)	2.554	2.544	+ 0.4	2.454	+ 4.1
Bricklayers	2.810	2.803	+ 0.2	2.721	+ 3.3
Structural Ironworkers	2.513	2.502	+ 0.4	2.405	+ 4.5
Carpenters	2.339	2.328	+ 0.5	2.238	+ 4.5

CONTRACTS AWARDED (thous.)	August 1950 (5-weeks)	August 1949 (4-weeks)	% Change†	Eight Months 1950 (35-weeks)	Eight Months 1949 (34-weeks)	% Change†
Total U. S. (ENR reported)	1,164,682	781,416	+19.2	8,004,886	5,340,827	+45.7
Private	702,103	371,440	+51.2	4,635,750	2,485,438	+81.1
Public	462,579	409,976	− 9.7	3,369,136	2,855,389	+14.6
Federal	59,981	74,163	−35.4	891,449	735,095	+17.8
ENR Constr. Volume Index, '13 = 100	385	352	+10.2	395	285	+38.6
NEW CONSTRUCTION CAPITAL						
Total	344,831	481,330	−42.7	3,338,124	3,605,991	−10.1
State & Municipal Bond Sales	255,392	331,649	−38.4	1,952,804	1,958,896	− 3.2
Corporate Security Sales	89,439	149,681	−52.2	1,385,320	1,647,095	−18.3
Federal (non-federal work)	.....	.....	.....	.....	.....	.....
Federal (federal work)	.....	.....	.....	.....	.....	.....

MATERIAL SHIPMENTS & LABOR SUPPLY	July (7) June (6) 1950	1949	% Change	Seven Months (7) Six Months (6) 1950	1949	% Change
Cement, thous. bbls., Bu. of Mines	24,749(6)	20,667(6)	+19.8	100,132(6)	90,301(6)	+10.8
Fabr. Struc. Steel, thous. tons, AISC	132(7)	148(7)	−10.8	1,058(7)	1,155(7)	− 8.4
Lumber, mil. ft. bm., NLMA	3,600(6)	2,729(6)	+31.9	19,343(6)	14,662(6)	+31.9
Lumber Prod., mil. ft. bm., NLMA	3,579(6)	2,778(6)	+28.8	18,323(6)	15,050(6)	+21.7
Contract Const. Employ., thous. BLS	2,502(7)	2,277(7)	+ 9.9	(Av.) 2,124(7)	Av.) 2,078(7)	+ 2.2

† Computed on a weekly basis # Revised

35 G.P.M. from each MORETRENCH WELLPOINT KEEPS THIS JOB BONE DRY!

21-inch sanitary sewer at Rockford, Illinois.

Edwin Hogan, Contractor.

10 feet of water in sand and gravel.

Wellpoints required on **one** side of trench only.

Economical operation and guaranteed results make Moretrench Wellpoint Equipment tops on any wet job.

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Protection From Bombs

THE KOREAN WAR, like Pearl Harbor, cleared away a lot of wishful thinking about the kind of world we have to live in. And like Pearl Harbor it engendered a sudden fear of what an enemy bombing would do to our cities, at the same time bringing forth a rash of schemes for defense and protection.

What makes the present different from Pearl Harbor days is that these schemes must be evaluated against a permanently changed pattern of world conditions instead of merely weighing them for usefulness in an emergency that will end when a war is won. Today there is no war in that sense, but rather a state of armed preparedness with no foreseeable end.

In a situation of this kind the challenge to engineers, architects and construction men probes deep into fundamentals rather than merely offering an opportunity to build some special kind of air raid shelter—even though that also may be involved. Among these fundamentals are those of design loads for ordinary structures, of the possibilities of providing protection in conventional buildings and of the economics of location and financing of shelter structures. Just as the possibility of an earthquake or a tornado must be taken into account in certain areas, so must bombing now be considered as a hazard.

One of the most pertinent examples of this necessary new mode of approach is offered by the proposals that have been brought forward in several cities—New York and Los Angeles for example—for combining underground parking facilities with air raid protection. If we were as certain to be bombed as Berlin, Essen or Cologne were, we could probably justify great structures with 12 ft thick walls and 20 ft thick roofs solely as refuges. But our circumstances are quite different, and require that protection be provided in structures that have some other continuing utility. The underground parking garage is one of these, although its cost will probably require subsidization.

A. V. Perthou of the U. S. Appraisal Co., West Coast consultants, in a study for Seattle found that 1,000-car garages that would also accommodate 15,000 persons would cost $3½ million, only 40% of which could be amortized by parking fees.

The important point here is the recognition that bomb protection is going to be necessary on some kind of a permanent basis, and that not only new concepts of engineering design but of engineering economics are going to be required to justify the structures that are to be built.

This ever-present bomb danger also brings the adequacy of design loads and concepts for every kind of a conventional structure into question. Shortly after the end of the war Harold E. Wessman, now dean of engineering at the University of Washington, suggested that the design of all frame buildings should take possible bomb forces into account. Early this year Harry L. Bowman, professor of structural engineering at Drexel Institute in Philadelphia and the country's top authority on bombing effects, urged this same course in these pages (ENR Jan. 26, p. 24) and detailed ways and means for making buildings more bomb resistant. There is no evidence that these suggestions have ever been followed, yet the world picture brought into bold relief by the Korean situation argues in their favor. Under existing conditions it may well turn out to be as logical to take bomb forces and effects into account as it is those resulting from earthquake and tornado.

The important thing for engineers, architects and construction men to ponder is the difference between a war emergency of limited duration and a permanent change in our mode of life. It is the latter that threatens us now and which seems destined to require alterations in some of the economic and scientific concepts by which engineering practice has been guided

Approaches First

CITY PLANNERS—and the many groups pushing behind them—can take a solid lesson from Boston's present predicament: Ultra-modern facilities (such as bridges) are fine things, but without properly coordinated planning they're not complete blessings.

Case in point is the $27,000,000 Mystic River Bridge. The state legislature approved it without a qualm and without approaches—largely because the bridge was a revenue bond undertaking that the state didn't have to support with credit. The bridge was built and today its double tier of roadways connect a mad welter of traffic in downtown Boston with a wild tangle of narrow streets in neighboring Chelsea.

Now, with the bridge built and the confusion getting greater, the city is beginning the tremendous job of tacking approaches onto the facilities (ENR April 20, p. 42). Of course it's true that economy-minded voters might have balked at the full program that will now have to be built—the Storrow Memorial Highway, the Central Artery, the connections to Logan airport and the rest—if they had been presented as a package that included the Mystic Bridge. True also that the problem of relocating residents of crowded areas that will have to be cleared for the new connections is bound to be slow and difficult.

But, as far back as the construction of the George Washington Bridge in New York, planners realized that the approaches are as important as the bridge—without them the new facility doesn't fill its role. It's frequently better to plan and build the approaches first—that's what takes the time.

Cities Grow, Too...

Like a growing boy, most cities today are "busting out at the seams"

TAKE a look at your city! Industry needs room to grow. Residential areas are swollen with new population. Yesterday's roads don't fit today's traffic and transport problems.

The old town needs a new suit of clothes—*up-to-date maps* to provide city planners with *up-to-the-minute information*. But the costs of collecting new map facts by conventional methods are high. No city can afford to wait years for maps needed *now*.

Aero Service and its highly skilled engineers can meet your mapping needs with speed, accuracy, and economy. Our aerial mapping methods deliver reliable topographic maps in a matter of months—*not years*—at less than half the cost of ground surveys. Your city planning can move ahead swiftly—at the lowest possible cost to the taxpayer.

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ENGINEERING NEWS-RECORD

SEPTEMBER 7, 1950 VOL. 145 NO. 10

Road bill retains 50-50 aid; appropriates $500 million

Amount is what President requested; measure omits federal-aid extension to local rural roads, greater proportionate aid to main interstate network

Congress approved two important decisions last week when it passed the highway bill for fiscal 1952 and 1953. Those decisions will hold federal-aid to its present course—in line with established, time-tested policy—during the next two years.

First, Congress authorized $500 million a year of federal-aid, to be apportioned and matched on the same basis as at present, in accordance with the President's request.

Second, it accepted a bill from which House-Senate conferees had eliminated a number of special aid provisions that had been strongly advocated and warmly debated in Congress during the last six months.

These controversial features would have extended federal aid to local rural roads and given added help to projects on the main interstate network. Minor concessions were made in the final bill to supporters of local roads and metropolitan expressways, but the measure as passed contains no major deviation from existing basic policy.

Total funds authorized for the two years amount to nearly $1.2 billion. The $500 million a year of federal-aid consists of $225 million for the primary system, $150 million for secondary, and $125 million for urban, as originally approved in the House version of the bill which was passed several months ago.

Other annual funds authorized in the bill are: Forest highways, $20,000,000; forest roads and trails, $17,500,000; national parkways, $13,000,000; national park roads, $10,000,000; Indian roads, $6,000,000; Inter-American Highway, $4,000,000; roads on public domain, $5,000,000; and Tongass forest roads in Alaska, $3,500,000. In addition, the bill carries an emergency fund of $10,000,000 and an authorization for defense access roads, also amounting to $10,000,000.

• **Interstate system**—Special funds to speed improvement of the 40,000-mile interstate network were struck out by the conferees in readying the bill for passage. The House in its earlier version had approved $70,000,000 a year to be expended on the interstate routes, with an added provision allowing the states to use these funds to pay from 50 to 75% of the cost of interstate projects. The Senate version of the bill, passed only two weeks ago—after President Truman had sent a special request that federal-aid be limited to $500 million—eliminated the interstate fund.

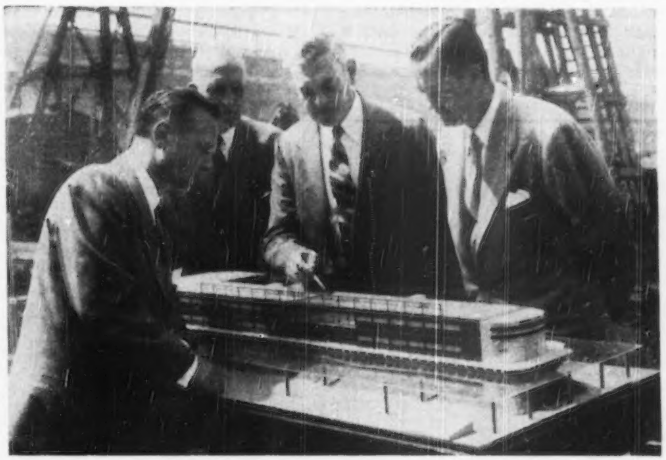
But the Senate bill adopted and expanded another feature of the House version, which would have allowed states to issue bonds for faster completion of interstate improvements and to use future federal interstate allocations to pay off the principal of those bonds. The Senate took the bonding provision and applied it on a much wider basis—to the primary and urban systems. This adaptation carried over into the final bill.

As written into the legislation passed by Congress, future federal-aid allotments for the primary and urban systems may be used to pay the principal indebtedness of bonds issued to build projects on those systems. Further, and even more important, the privilege applies not only to states but also to cities, counties, and other political subdivisions.

Implications of this broadening of the bonding provision cannot be estimated now.

Certainly the potentialities are great, as public works officials generally agree. The cities put up a strong argument for the bonding privilege at congressional hearings; they have the problem of raising money to complete expensive expressway projects within reasonable time. Whether the federal government eventually will be drawn into paying more than its presently

(Continued on page 24)



THIS ONE WON'T BURN—Something entirely new in pier design is demonstrated by Emil Praeger, the designer (third man), on the occasion of ceremonies at which work began on New York's Pier 57, of which this is a model. To replace a wood-pile supported pier that burned three years ago, the new pier will be founded on four large concrete boxes set on bottom. Riverbed mud will be consolidated with the aid of 300 100-ft-long sand drains. Part of pier support will come from consolidated mud; part of it from boxes' buoyancy. Listening to Praeger are Marvin H. Lechtman, deputy commissioner of New York's Department of Marine and Aviation, Cassius Mallory, vice-president of the Grace Line (pier's lessee) and, at right, E. F. Cavanagh, Jr., commissioner of the Department of Marine and Aviation. (Wide World photo)

Highway bill . . .

(Continued from page 23)

planned share of these costly improvements remains to be seen.

• **Local rural roads**—A hard fight to obtain a special federal-aid fund for local rural roads was made in the Senate. No such fund was approved in the Senate-passed version of the bill, but that draft did include a requirement that secondary federal-aid money be spent exclusively on county roads to the maximum extent possible in each state.

In the final bill that Congress passed last week, the Senate language on county roads was considerably modified. The legislation defines the roads to be included in the federal-aid secondary system and adds that state highway departments and local officials will cooperate in selecting projects for construction and in writing the specifications, or construction standards. All projects, as usual, are subject to approval by Public Roads.

Surprisingly, the final bill failed to include a Senate provision which would have allowed all authorized funds to be applied to roads judged necessary to the national defense, in the event that the President or Congress declared a national emergency. Funds so used would not have been matched by the states, and the states would be reimbursed later for federal aid thus lost.

Under the law as passed, the 50-50 matching ratio applies to all parts of the federal-aid system. The bill authorizes an increase in the federal share of right-of-way costs from one-third to one-half. This increase is particularly important to urban projects.

Auction lumber buying resumed by Army Corps

Other developments due to Korean situation: Military camp rehabilitation, reserve recalls, deferments

This week the Army Corps of Engineers is buying southern lumber in an auction at Atlanta. A similar auction will be held in Portland, Ore., next week.

The Portland auction is the first instance of western lumber-purchase by Army auction since World War II.

From 30,000,000 to 50,000,000 board feet of yellow pine and other southern softwoods will be bought in Atlanta. (There have been auction-purchases of southern timber, in smaller amounts at various times since World War II.)

At the Portland auction, bids will be submitted for 25,000,000 to 35,000,000 board feet of Douglas fir and Ponderosa pine. More than 1,500 mills and wholesalers, including 1,000 west-coast operators, will participate in the Portland auction.

The official reason for calling the auction is that government purchases of lumber for the armed forces are on a wartime footing because of the Korean situation, a Corps of Engineers spokesman says.

• **Military camp de-mothballing**—Meanwhile word comes of projects that may have use for the lumber purchases. Military camps are being put in shape for training larger numbers of soldiers. Two examples are Camp Polk, Louisiana, and Fort Leonard Wood, in Missouri.

The north portion of Camp Polk's reservation is to be renovated at a cost of $3,000,000, to bring the center to World War II strength. The area will be completely renovated.

Cost of Fort Leonard Wood repairs is estimated at $2,000,000. The Fort, which was inactivated soon after V-J day, includes about 4,000 buildings, in a fair state of repair.

• **Officer recalls and deferments**—Along with war-footing lumber buying and camp reactivation, the Department of the Army is taking action in both recall of engineer officers and deferment of engineering personnel. In the latter part of August, the department announced the recall of an additional 570 Corps of Engineers reserve captains and lieutenants on an involuntary basis.

All Engineer Corps reserve officers called by the Army will be on active duty by Oct. 13.

From North Dakota comes word that may indicate army policy with respect to one group of reserves.

Key Garrison Dam personnel who also are members of armed forces reserves will not be taken off their jobs by the army's recall of reservists. This announcement is made by Lt. Col. R. J. B. Page, assistant Garrison district engineer.

Page said that the district has received authorization to establish an "augmentation" military unit which will consist of 15 officers, sufficient to operate the dam's construction. He said a list of the men the district wants in the unit has been submitted to Fifth Army Headquarters in Chicago. As soon as the unit is activated, the men involved will be transferred on Army rolls from their present reserve designations to the Garrison Dam unit, where they will be able to continue dam construction regardless of mobilization plans.

Of about 500 persons employed by the district, about 25 are members of the reserve.

HOW MANY MILES TO BOSTON TOWN? It's a painless trip indeed for the motorist who crosses New Hampshire in its coastwise zone, now that the state's turnpike is open. Fifteen miles of almost-level, almost-curveless four-lane road are interrupted only by this graceful toll station. The mileage to Boston is two-score and ten. (Construction story ENR Jan. 12, p. 43.)

President trying to save Science Foundation bill

In an attempt to save a $475,000 appropriation for the National Science Foundation, President Truman last week notified the chairman of the Senate Appropriations Committee that he was about to name 24 distinguished citizens to the National Science Board, a policy-making group for the foundation.

The bill is in a congressional pigeonhole, having been rejected as not immediately useful to the war effort. The President informed the committee that the foundation and the research it will promote are essential for national security.

"The Defense Production Act of 1950"

(McGraw-Hill Washington Bureau)

All business decisions now will be influenced—dominated in some instances—by Washington's ideas of how the economy should behave. President Truman is winding up with pretty full war powers, thanks to "the defense production act of 1950."

He will use them gradually at first, but the expectation is that later the controls will spread out and engulf more and more business.

The newly-provided price and wage control powers are scheduled to expire June 30 of next year. Other controls imposed before next June 30 can continue in effect until June 30, 1952. But whether the expiration dates are allowed to stand will depend on conditions at the time. Here are the major powers:

• **Priorities and allocations (Title I)**—Producers can be ordered to accept defense contracts and to put them ahead of all other business.

All materials can be controlled. Defense and essential civilian needs will be given a first claim on materials and facilities. The President not only can order cutbacks in non-military production, but he can (if need be) force a shutdown of non-essential production. Under allocations provisions, he can install consumer rationing. Inventories can be limited. This power will be used to prevent hoarding, or excessive stocking up.

• **Requisitioning (Title II)**—The President can requisition any materials, parts and equipment needed for manufacturing, servicing or operating defense needs. But first he must make a finding that the items to be requisitioned are necessary for defense, that the need for them is immediate and that other means of obtaining them have been exhausted. Original owners are to have first show at buying back requisitioned property.

• **Expansion of capacity, supply (Title III)**—Methods for boosting production are:

(1) The government, through the Federal Reserve System, will guarantee loans to expand output.

(2) Long-term purchase contracts can be made by the government for metals, minerals, liquid fuels and other defense-needed items. Chief purpose is to stimulate marginal production and development of new sources.

Up to $2-billion is authorized for the expansion program. The Treasury can be called on to make $600-million immediately available. An additional $1.4-billion is authorized to be appropriated by Congress later.

• **Price and wage stabilization (Title IV)**—Wage and price control can be attempted on a voluntary basis. The President is given authority to seek industry-labor agreements to hold the line on prices and wages. And he can suspend the anti-trust laws to make such agreements possible.

But the President also has authority to order price and wage ceilings, on a selective basis or blanketing everything. He would have only to find that voluntary stabilization would not be adequate and the prices have either risen or threaten to rise unreasonably above the May 24-June 24, 1950 level.

Price ceilings and wage ceilings are tied together. If, for example, the President ordered a price ceiling on steel, then he would have to order a wage ceiling for steel workers.

• **Limitations**—Here are some major limitations on the President's price and wage control powers:

(1) No ceilings may be set on margin requirements on any commodity exchange; rates or fees for professional services; prices or rentals of real property; rates charged by public utilities or common carriers; insurance rates; prices of newspapers, periodical books, motion pictures and other communications.

(2) Specifically prohibited is elimination or restriction of brand or trade names and grade labelling of any materials or products; standardization of any materials is prohibited unless the President determines that such standardization is the only practical method for securing effective price controls.

(3) Consideration must be given, in establishing a ceiling price, to sellers who have contracts in effect for future delivery of materials processed from raw materials in which seasonal demands or normal business methods require contracts for future delivery.

The President does have authority to exempt any material from ceilings, or to lift ceilings, if he finds such exemptions will stimulate production for the national defense, or if such ceilings aren't necessary to stabilize the economy.

• **Settlement of labor disputes (Title V)**—The President is given no power to order settlement of labor-management disputes. The legislation stipulates that disputes policy is to rely on voluntary action—negotiation and conciliation—to prevent strikes. The President, can, however, call labor-management conferences, or set up disputes-handling machinery along the lines of the old War Labor Board.

It is specified that nothing shall be done which is contrary to either the Fair Labor Standards act (minimum wages, maximum hours) or the Taft-Hartley act.

• **Control of credit (Title VI)**—The Federal Reserve Board is given full power to regulate installment credit.

Control of real estate credit hinges largely on power given the President to raise cash down payments and shorten amortization period on housing financed by government-insured mortgages. It has been the government's terms and not those of private lenders which has produced the housing inflation.

• **General provisions (Title VII)**—Business advisory committees: These are authorized to be set up to consult with the government on operation of control programs.

Small business: The legislation specifies that it is to be given favored treatment in all possible ways. But this actually amounts to no more than a declaration of policy.

Antitrust laws: The government can grant exemptions where necessary to help the defense program along.

Watchdog committee: A group of 10 members of the House and Senate banking committees (five from each) will ride herd on how the powers are used.

How production act affects construction

Priorities, allocations and real estate credit control will gradually but inexorably influence the volume and character of construction from here on. The accompanying analysis lists the broad powers granted the President in the Defense Production Act—applicable to construction and to all other business.

Immediate effects of the new law on construction are not expected to be drastic. They already have been pretty well discounted by owners and builders.

Priority for military orders is the only power that can be exercised immediately. It may increase the delay in deliveries of construction equipment and materials to some non-defense buyers.

Real estate credit controls for new construction could be invoked promptly, provided the Government was willing to proceed without administrative policing machinery. If so invoked, the controls would have an effect on commercial building. Residential construction already is dominated by federal credit policies.

However, if the military situation remains unchanged, no severe reduction may be needed in non-defense construction.

Neglected bid formality causes loss of contract

Because the company failed to submit its bid bond to the municipal corporation counsel's office for approval, as required by the city charter, J. H. Pomeroy & Co. of San Francisco lost a $255,400 contract on a City Light project at Seattle.

The firm was low bidder by more than $100,000 on installation of hydraulic turbine equipment in the Gorge Dam powerhouse but, because of the legal technicality, the award went to the Guy F. Atkinson Co., also of San Francisco, for $364,800.

Pomeroy's attorney, contending failure to have the bond checked was a "mere oversight," asked the Board of Public Works either to accept the Pomeroy bid or call for new bids. E. R. Hoffman, City Light superintendent, answered that acceptance of an irregular bid would set an undesirable precedent and that a new call for bids would delay the project to such an extent that City Light would lose more in revenue than it might gain by a lower bid.

"To readvertise for bids would mean a month's delay, at least," Hoffman pointed out. "For that period it would cost us $58,000 to buy the power from the Bonneville Power Administration, or $200,000 if we had to use steam-generated power."

The Atkinson company is performing other work at the powerhouse under a previous contract.

Chief Joseph Dam bids to be opened Nov. 1

Bids on a $30,000,000 contract for second-stage construction of Chief Joseph Dam across the Columbia River 51 mi. below Grand Coulee Dam in north central Washington will be opened Nov. 1 at Seattle, according to Lt. Col. A. J. D'Arezzo, acting district engineer of the Seattle District, Corps of Engineers.

The hydroelectric dam will be the second largest power producer in the world, exceeded only by Grand Coulee. Earlier it had been predicted that start of this work might be postponed (ENR July 27, p. 27), and the decision is still up in the air.

Houston water development project approved by voters

A $24,000,000 bond issue to finance construction of a surface-water supply for Houston, Tex. (ENR July 27, p. 36) was approved by citizens Aug. 26, by a vote of 22,586 to 5,300.

No one campaigned against the proposal. Houston engineers had been campaigning quietly in favor of the project for several years.

At present, Houston depends entirely on deep wells for its domestic water. The new project will include a dam on San Jacinto River, to the north of Houston, plus a canal to a new water-treatment plant. It is expected that the job can be completed by mid-1952.

To support revenue bonds called for by the vote, it will be necessary to increase water rates 50 percent.

House ok's new airport for Greater Washington

The House of Representatives has passed a bill authorizing the construction of a new $14,000,000 airport for the Greater Washington area. The measure is an authorization only. The $14,000,000 will have to be voted in a separate bill. After the House had passed the bill, President Truman sent a message to Congress asking for a new appropriation of $2,150,000 to acquire land for the new airport.

It is expected that the airport will be located in Virginia, probably in Fairfax County, near Annandale. It will cover nearly 4,000 acres.

HE'LL FIX IT LATER—Sgt. Glenn Williams, an engineer with the First Cavalry Division, places an explosive charge under a bridge in South Korea. (Wide World Photo)

Manslaughter charged in crane electrocution

A San Francisco general contractor, his superintendent, and a crane operator are facing manslaughter charges because of the electrocution of a labor foreman. Charges are preferred by the California Division of Industrial Safety in a San Francisco municipal court.

Nestor Bizcaini was electrocuted when a portion of the crane operated by E. C. Harden touched an 11,000-volt wire during the construction of a garage in San Francisco. Arthur W. Baum was contractor for the work, Roy Stout superintendent.

California state safety orders and the California penal code prohibit placing equipment in a position where any portion of it may come within 6 ft. of a high-tension wire. In the last four years 89 workers have been electrocuted by such equipment coming in contact with overhead high-voltage wires.

A defense motion for dismissal has been denied by Judge Charles S. Peery. Alfred Del Carlo, deputy district attorney, said that "all such cases will be vigorously prosecuted from now on. Human life is too precious to be risked because of any pressure in finishing a job."

Discovering quicksand, contractor forfeits bond

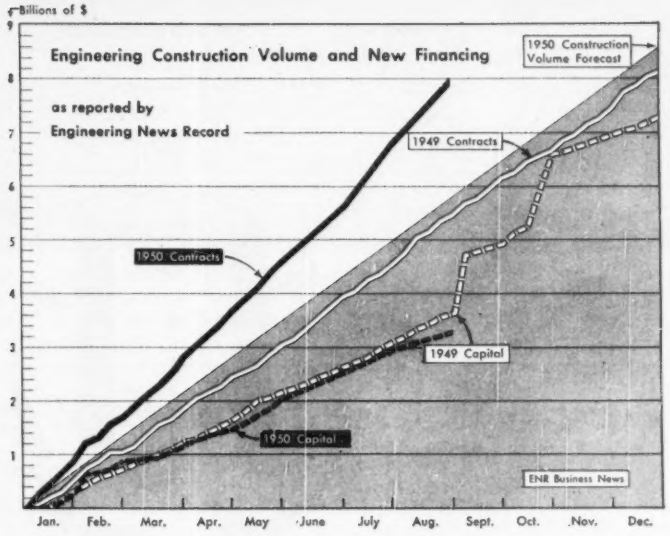
After discovering quicksand in test borings, the Ferguson and Edmondson Co., Pittsburgh, informed T. J. Kauer, Ohio Highway Director, that it would forfeit a $10,000 bond and not build a bridge over the Chagrin River in Lake County. The firm was low bidder July 27 at $513,951. Project also includes a mile of road relocation.

The bid was $123,049 below the engineer's estimate and $105,217 below the next lowest bid, which was submitted by the Horvitz Co. of Cleveland. The project will be readvertised for bids.

L. F. Schaeublin, chief engineer and assistant director of the Ohio Highway Department, said the company's borings showed the water silt to be in the same place as shown on the soil profile made by the department, which had been available to bidders. Schaeublin said the company's representative indicated the company had not known the soil profile was available.

Refusal of a bidder to accept a contract once it has been awarded is almost unprecedented as far as the Ohio Highway Department is concerned, Schaeublin said.

CONSTRUCTION BUSINESS



Heavy construction tops $8 billion

Unseasonally heavy contract awards for engineering construction in August total $1,164,682,000. This pushes the eight-month total to $8,004,886,000 as reported by ENR, an increase of 46% over 1949.

New England, with $380 million in new construction for the eight months, is running 60% ahead of last year, the Middle West with $683 million is 62% ahead, the South with $801 million is up 52%, Far West with $850 million is 50% ahead, Middle Atlantic with $1,353 million is up 40% and West of Mississippi with $1,423 million is 33% above 1949.

Private construction at $4,635,750,000 is 81% higher than a year ago. Mass housing is up 116%, commercial building, up 68%, unclassified construction (mainly pipelines), up 98% and industrial building, up 26%.

Public construction at $3,369,136,000 is running 15% higher than in 1949. Highway contracts at $889 million are 39% higher, public buildings at $1,120 million are 35% higher. Earthwork and waterways at $313 million are running 21% behind last year, public housing at only $196 million is down 34% from a year ago. Bridges at $242 million are up 12%. Waterworks at $155 million and sewerage at $180 million are up 2% and 1% respectively. Public unclassified construction is 18% higher than it was last year.

Industrial building contracts for August total $221 million, the highest for any month this year.

Construction Cost Index rise due to lumber

The wild lumber price rises since last month have raised the ENR Construction Cost Index 1.7% in one month and the ENR Building Cost Index 2.5%.

The Construction Cost Index is 530.37 for September, the Building Cost Index 392.81, both based on 1913=100. On a 1949=100 base the September Construction Cost Index is 111.18 and the Building Cost Index is 111.66.

Wage rates show no increase at all this month for common labor and only a 0.4% increase in skilled, cement is up only 0.1% and mill prices for structural steel are unchanged. This puts the entire burden of the increase in the cost index on lumber, with fir 2x4s up 6.1% for the month, pine up 11.2%.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—AUGUST, 1950

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $28,000; *other public works* $50,000; *industrial buildings,* $68,000; *other buildings,* $250,000

Five Weeks—Thousands of Dollars (000 Omitted)

	August, 1950							U. S. Cumulative Eight Months		% Change '49-'50	Canada August, 1950
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1950 (35 wks.)	1949 (34 wks.)	Aver. Wk.	
Public Works											
Waterworks	958	2,470	5,862	2,923	10,154	1,302	**23,669**	**154,984**	147,300	+ 2	3,982
Sewerage	1,054	9,358	4,127	4,496	8,059	4,956	**32,050**	**180,322**	173,975	+ 1	1,355
Bridges	538	8,971	4,098	1,123	4,235	2,101	**21,066**	**242,233**	210,102	+12	571
Earthwork and waterways	101	1,327	10,398	389	3,440	2,098	**17,753**	**313,149**	383,016	−21	1,202
Streets and roads	7,880	39,104	27,726	13,111	31,496	14,665	**133,982**	**889,248**	620,430	+39	3,474
Public buildings, residential	14,726	9,616	3,226	5,664	5,813	3,385	**42,430**	**196,332**	289,503	− 34	4,514
Other public buildings	8,000	29,281	29,648	26,472	45,488	15,441	**154,330**	**1,120,393**	806,295	+35	13,245
Unclassified	3,413	10,697	10,303	2,949	5,772	4,165	**37,299**	**272,475**	224,768	+18	3,553
Total public	**36,670**	**110,824**	**95,388**	**57,127**	**114,457**	**48,113**	**462,579**	**3,369,136**	**2,855,389**	**+15**	**31,896**
Federal government (included in above classifications)	288	3,589	22,883	1,401	25,337	6,483	**59,981**	**891,449**	735,095	+18	11,120
Private											
Bridges	.....	.....	.....	.....	90	69	**159**	**6,345**	3,503	+76	755
Industrial buildings	2,205	38,219	94,785	41,394	39,002	5,679	**221,284**	**908,262**	699,933	+26	31,493
Com'l. buildings, residential	.....	97,334	41,409	18,180	76,408	58,652	**291,983**	**2,451,659**	1,101,155	+116	5,870
Other commercial buildings	9,766	24,721	18,588	22,093	30,509	8,903	**114,580**	**668,428**	385,909	+68	4,080
Unclassified	.....	274	8,895	3,978	37,086	23,864	**74,097**	**601,056**	294,938	+98	527
Total private	**11,971**	**160,548**	**163,677**	**85,645**	**183,095**	**97,167**	**702,103**	**4,635,750**	**2,485,438**	**+81**	**42,725**
Total Engineering Construction:											
August, 1950 — 5 weeks	**48,641**	**271,372**	**259,065**	**142,772**	**297,552**	**145,280**	**1,164,682**	.....	.....	.....	**74,621**
July, 1950 — 4 weeks	45,637	220,873	170,950	234,263	348,630	154,735	1,175,138	.....	.....	.....	42,735
August, 1949 — 4 weeks	19,891	232,314	124,293	94,980	175,141	134,797	**781,416**	.....	.....	.....	56,863
Eight Months — 1950	**379,699**	**1,952,453**	**1,255,237**	**1,153,141**	**1,950,546**	**1,313,810**	.....	**8,004,886**	.....	**+46**	**432,410**
Eight Months — 1949	230,966	1,352,654	801,292	683,036	1,422,546	850,353	.....	.....	5,340,827	.....	414,562
% Change '49 to '50	+60	+40	+52	+62	+33	+50	.....	.....	.....	.....	+1

BIDS AND BIDDERS

Major project news received after Construction Reports, page 89, went to press.

Pipeline—The Platte Pipe Line Co., Casper, Wyo., formed by Continental Oil Co., Pure Oil Co., Sinclair Refining Co., British-American Oil Co., and Ohio Oil Co., will construct a $60,000,000 crude oil pipeline from Worland, Wyo., 140 miles to Casper then 940 miles to Wood River, Ill.

Power Plant—American Gas and Electric Co. has announced that Appalachian Electric Power Co. will build their $40,000,000 steam electric power plant at Glasgow, W. Va., about 20 miles from Charleston. The plant will have an ultimate capacity of 1,050,000 kilowatts.

Water Supply—City of Houston, Tex., voted approximately $24,000,000 bonds Aug. 26 for water supply project. Contracts will be awarded for San Jacinto Dam structure at $7,500,000; San Jacinto reservoir at $1,585,000; concrete-lined canal, 28 miles from dam to city limits at $1,286,000; dam filter plant at $4,500,000; pumping plant at $375,000; relocate existing pipelines, $439,000; water supply lines, $2,267,000; and miscellaneous extensions of water system, $1,500,000. Horner & Shifrin, of St. Louis, Lorenze G. Straub, of Minneapolis, and J. Niels Thompson, of Austin, Tex., are consulting engineers. L. Fugate is city engineer.

Assembly Plant—Lincoln-Mercury Division of the Ford Motor Co., Detroit, plans to construct a $10,000,000 1-story assembly plant on Michigan Ave., Wayne, Mich. Giffels and Vallet, Inc., Detroit, are architects.

Hydroelectric Plant—J. A. Jones Construction Co., Charlotte, N. C., was awarded contract for hydroelectric plant on the Lempa River and control works on Lake Guija, San Salvador, El Salvador at $10,057,500.

Housing—Beverly Manor, c/o Dr. Webster R. Robinson, Columbus, O., awarded contract for 122 apartment buildings in Beverly Manor development, north of Broad St. and west of James St., to Don A. Loftus & Associates, Inc., at $7,930,000. The buildings will be 3-story and house 11 families each.

High Schools—Baltimore, Md., asks bids Sept. 20 amounting to $6,000,000 for Edison-Barton-Mergenthaler Vocational High Schools on 16-acre plot at 35th and Hillen Rd. Taylor & Fisher are architects; Henry Adams, Inc. is mechanical engineer.

Power Plant—Stone & Webster Engineering Co. will build an $8,000,000 addition to the Potomac Electric Power Company's Benning Rd. power plant in northeast Washington, D. C.

Housing Project—Buffalo, N. Y., Municipal Housing Authority asks bids Sept. 15 on 7 buildings for 615 families to cost approximately $5,500,000.

Office—Equitable Life Assurance Society of the United States will build a $5,000,000, 15-story office building in downtown San Francisco, Calif., at the corner of Sutter and Montgomery Sts. on a 260,000 sq ft lot purchased from the heirs of Joseph A. Donohue for about $1,750,000.

Highway and Bridge—The Savin Construction Corp., East Hartford, Conn., was low bidder at $3,953,370 on highway and bridge construction at Danvers, Middleton, Topsfield and Boxford, Mass. P. H. Kittfield, Boston, is chief engineer.

Chemical Plant—Philippine Government awarded contract for chemical fertilizer works and hydroelectric power plant in central Mindanao to Westinghouse Electric International Co. for an estimated $4,600,000.

School Buildings—Board of School Commissioners, Indianapolis, Inc., received low bid on 5 buildings for the Manual Training High School, Madison Ave. and Pleasant Run Blvd., from Jas. McHugh Construction Co., of Chicago, at $3,350,000. D. A. Bohlen & Son, Indianapolis, is architect.

Housing—Malden, Mass., Housing Authority plans to construct 250-unit housing project near Everett line for approximately $2,500,000. A. A. Dirlam, Boston, is architect.

Hospital—English Construction Co., Altavista, Va., was low bidder on the Danville, Va., Memorial hospital additions at $2,450,400 and nurse's home at $588,740.

Housing Project—Pawtucket, R. I., Housing Authority will construct 225-unit housing project for about $2,225,000. Charles A. Maguire & Associates, Providence, are architects.

High Schools—Orange County, Fla., Board of Public Instruction received low bid of $2,512,000 on North and South Orlando, Fla., high schools from J. Hilbert Sapp, Inc., West Palm Beach.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost.	Sept. '50	530.37	254.95	111.18
Bldg. Cost..	Sept. '50	392.81	212.34	111.66
Volume	Aug. '50	385	169	135

Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of Sept. 7 1950		Cumulative 1950 (36 wks.)	Cumulative 1949 (36 wks.)	% chge
Federal	$3.8	$895.2	$785.0	+14
State & Mun.	59.4	2,537.2	2,224.7	+14
Total Public.	$63.2	$3,432.4	$3,009.7	+14
Total Private	192.9	4,828.6	2,632.9	+83
U. S. Total.	$256.1	$8,261.0	$5,642.6	+46

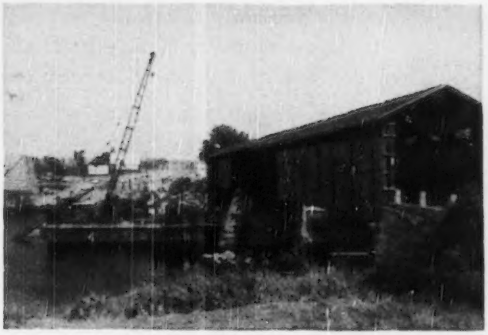
Contracts by type of work

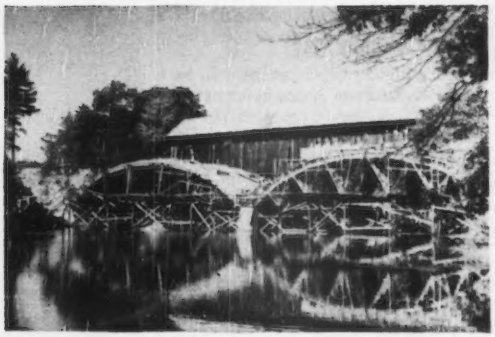
	This Week	Cumulative 1950 (36 wks.)	Cumulative 1949 (36 wks.)	% chge
Waterworks.	$5.0	$159.9	$153.9	+4
Sewerage ...	9.6	190.0	183.7	+4
Bridges	4.7	253.3	220.5	+15
Highways ...	18.0	907.2	664.6	+37
Earthwork, Waterways	1.3	314.5	416.8	−25
Buildings:				
Public ...	18.1	1,138.4	833.8	+37
Housg., pub.	1.4	197.8	294.6	−33
Housg., priv.	53.4	2,505.0	1,120.4	+124
Commercial	8.2	676.6	395.3	+71
Industrial .	64.9	973.2	743.7	+31
Unclassified .	71.5	945.1	538.5	+76

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (36 wks.)	Cumulative 1949 (36 wks.)	% chge
Corporate Securities.	N. A.	$1,746.4	...
State and Municipal:			
Excl. Housing	N. A.	1,424.1	...
Housing	N. A.	581.6	...
Federal & Fed. Aid..	N. A.	1,006.8	...
Total Capital	N. A.	$4,758.8	...





ALAS, THE COVERED BRIDGE—Progress slowly is wiping out the picturesque covered bridges of the country's older areas. The New Hampshire highway department is the handmaiden of progress on two jobs shown above. At left is the Connecticut River crossing between Lancaster, N. H. and Lunenburg, Vt., being replaced by W. H. Hinman, North Anson, Me. At right is a construction view of replacement job near Hollis, N. H.; this work now is complete.

Clean-stream programs meet obstacles

The road toward clearing streams of pollution was proving to be a rough one last week. In principle, lamented some advocates, everyone is for the idea. In practise, it was hard to get compliance on occasion.

In Pennsylvania, for instance, state officials virtually accused some 60 municipalities along the Susquehanna River of dragging their feet to put off the construction of an estimated $50,000,000 in sewage treatment plants.

But the communities had a good answer—they said they didn't know how to finance the works that the State Sanitary Water Board has ordered them to build. All officials agree in principle with the state's objectives—but almost all claim lack of funds and seek extra time to find them. The state has remained adamant, refusing to grant time extensions, but suggesting the formation of authorities to finance the works.

Seeking to guard themselves against legal moves by the state, mayors of the Susquehanna communities (most of which now dump raw sewage into the river) obtain adoption of petitions to Gov. James H. Duff, asking for extension of the Sanitary Board's deadlines, adding the plea of uncertain materials due to the current war situation.

• **Not alone**—Pennsylvania wasn't alone in its troubles. In Texas, the state Game, Fish and Oyster Commission issued an ultimatum to the city of Texas City, ordering it to build a new disposal plant under the threat of lawsuit on charges of polluting Galveston Bay with raw sewage. The city bowed, said it would hold a bond election soon for approval of a $2,000,000 issue to finance the work.

Michigan's State Water Resources Commission met at Ann Arbor to take steps to free the St. Clair River south of Port Huron, of pollution. It issued orders against the centers of Marysville, St. Clair, Algonac and Marine City, ordering them to end discharge of untreated sewage by June, 1953.

Additionally, the Michigan city planned to meet with representatives of the city of Tecumseh to hear reasons why a suit should not be started for failure to comply with orders to build a new disposal plant; and planned to call the city of Pontiac onto the carpet to explain why it hasn't awarded contracts for a $90,000 plant.

And in New York's Westchester County, Pelham Township remained adamant in refusing to endorse the county's plans for a $4,930,000 sewer system for New Rochelle and vicinity aimed to reduce pollution in Long Island Sound. Speaking for the township, attorney Emmanuel Schwartz, said the town was satisfied with sewers built in 1925, now wants only "to be left alone."

• **Progress too**—There was progress on stream pollution, too. Rhode Island marked the end of another phase of its fight against pollution with the opening of a $200,000 sewage disposal plant for the state institutions at Howard, on Narragansett Bay; Toronto, Canada, opened a $9,000,000 sewage disposal plant in the Ashbridge Bay section, after a seven-year construction period; the Connecticut State Water Commission approved projects totaling $820,000 for the cities of Norwalk and Middletown; and Elmira, N. Y., completed plans for a $850,000 treatment plant enlargement.

PRICES HOLD

Aside from the wild gyrations of lumber, prices of most construction materials have not advanced to any great degree during the past month.

This conclusion is based on ENR's regular monthly check of prices in 20 major U. S. construction centers—which appears in four pages beginning on page 81 of this issue (the monthly Material and Labor Prices report).

Briefly, roofing materials are up in 10 cities; structural tile is up in four cities; vitrified sewer pipe is up in four; brick, up in three, and warehouse steel, up in three cities. Generally, the price rises were measurable in terms of cents, rather than dollars, as is the case with lumber (ENR Aug. 31, p. 27).

St. Louis area development awaits presidential O.K.

A resolution approving a compact between Missouri and Illinois for development of the St. Louis metropolitan area has been passed by the House of Representatives and sent to President Truman for his signature. Approval by the President will be the last step in the process, since both states and the United States Senate already have approved. His signature was considered to be a certainty.

A Bi-State Development Agency is set up under the compact. Actually, it has been in operation since last Sept. 20. It is designed to plan, construct and operate bridges, tunnels, airports and terminal facilities. In addition, it can coordinate plans for streets, highways, parkways areas, water supply and sewage and drainage facilities.

Mo. Valley development begins to pay off

The resources development plan for the Missouri River Basin is beginning to pay off, it was revealed in the annual report of progress by Interior Department agencies recently released by the Interior Missouri Basin Field Committee.

Five major multipurpose dams of the Missouri River Basin Project were completed by the Bureau of Reclamation in fiscal year 1950. Nine more are under construction. Over 38,218 acres of new land in the Missouri Basin have been brought under irrigation. One new power plant has been thrown on the line, and one recently completed dam was instrumental in preventing an estimated $3,500,000 in flood damage, the report showed.

Angostura Dam on the Cheyenne River in South Dakota, Enders Dam on the Frenchman Creek in Nebraska, Medicine Creek Dam on Medicine Creek in Nebraska, Heart Butte Dam on the Heart River in North Dakota, and the Cambridge Diversion Dam on the Republican River in Nebraska were listed as completed.

Dams listed as under construction by the Bureau of Reclamation included Kortes Dam on the North Platte River in Wyoming, Boysen Dam on the Big Horn River in Wyoming, Bonny Dam on the South Fork of the Republican River in Colorado, Dickinson Dam on the Heart River in North Dakota, Shadehill Dam on the Grand River in South Dakota, Cedar Bluff Dam on the Smoky Hill River in Kansas, Superior-Courtland Diversion Dam on the Republican River in Nebraska, Canyon Ferry Dam on the Missouri River in Montana, Trenton Dam on the Republican River in Nebraska, and Keyhole Dam on the Belle Fourche River in Wyoming. Granby Dam on the Colorado River in Colorado was also completed a part of the Colorado.

Savage Unit, an extension of the existing Lower Yellowstone Project in eastern Montana and consisting of 2,218 acres, is the only unit of the Missouri River Basin Project which was supplied with water during the last fiscal year.

New acreages are slated for early irrigation on the 60,000 Frenchman-Cambridge Unit. Two of the storage reservoirs for this unit, Enders and Medicine Creek Dam, have been completed and the third, Trenton Dam, is now under construction. About 60 per cent of the main canal, which will supply water to 15,000 acres of the project has been completed. A start has also been made on the diversion and canal system for the Bostwick Unit in Nebraska.

MUCK WORK IN VERMONT—Near Woodbury, Vt., Indianapolis (Ind.) contractor A. L. Dougherty has removed 52,000 cu yd of muck and replaced it with good fill, to form the foundation for part of a new state road. Muck depth varied up to 32 ft, along 2 mi of location, so he put a 1½-yd drag line with a perforated bucket on the job. Muck was unstable in roadside spoil banks, so trick was to get fill in immediately. Note fill operation next to dragline. Dale Sorgius is superintendent for Dougherty, and J. A. Durkee is in charge of the work for the Vermont Highway Department. (Spaulding Studio)

Ohio conveyor belt plan backed by labor unions

Ohio's dream of a long conveyor belt for moving iron ore and coal between Lake Erie and Ohio Valley communities near the Pennsylvania line (ENR Aug. 25, 1949, p 12) received a boost recently when the Ohio State Federation of Labor endorsed the proposal.

Two other groups, the state CIO organization and the Ohio Building and Construction Trades Council, had taken similar action earlier. The new support places about a million labor union members on record as favoring the "rubber railroad."

A spokesman for the Riverlake Belt Conveyor Lines, Inc., has expressed pleasure at the Federation's action, noting that permission to build the big belt was turned down by the last Ohio legislature on the grounds that "labor was against it."

"Now the only labor opposition we have," said the spokesman, "is from the railroad brotherhoods." He estimated membership in the brotherhoods at 80,000 in Ohio.

Hearings favorable so far on north S. F. Bay bridge

To date, no one is against a proposed North San Francisco Bay bridge connecting Marin and Contra Costa Counties which the State of California would like to construct.

Hearings on the north-bay proposal are being held in Richmond, Calif., by the Corps of Engineers. Opposition—or rather lack of agreement on the proper site—recently killed prospects for early construction of a second San Francisco-Oakland bridge (ENR June 1, p. 25).

The northern crossing is now handled by a ferry line, serving about 1,000,000 vehicles and 2,250,000 persons yearly. Proponents of the bridge claim it would carry twice that traffic.

The project now under discussion is a combined causeway and bridge from Point San Pablo at Richmond to a point on the Marin shore north of San Quentin prison. No direct discussion of the cost was made at the hearings, although a report was filed in which Earl and Wright, San Francisco consulting engineers, estimated the cost at between $30,000,000 and $36,000,000.

It was declared at the hearing that the bridge would provide a direct connection between the Redwood highway and U.S. 40, the East Bay main artery, and that it was needed to transport dairy and manufactured products, to provide connections with mainline rail facilities.

Army, Navy and California Division of Water Resources officials were not heard from at the proceedings. Those endorsing or giving evidence in favor of the bridge include the city administration of San Francisco; Ralph A. Tudor, special consulting engineer for the State Department of Public Works; and other civic and administrative organizations.

Joseph M. Tracy of Ogden is new Utah state engineer

Joseph M. Tracy of Ogden, Utah, has been named Utah State Engineer, succeeding Harold A. Linke who resigned the state post to enter private practice.

The new state engineer, a graduate of the University of Utah, served a 10-year period as Ogden city engineer until 1926. During that time he was active in developing the city's artesian well supply and sewerage system. In following years he was chief engineer for the Utah-Idaho Central Railroad. In 1934 he became regional engineer for the WPA in the 11-state western district. Since 1943 he has engaged in practice as a consulting engineer.

$20,000,000 WORTH OF HOUSING—Stonestown, San Francisco's new $20,000,000 residential community at southern edge of the city, will be ready for full occupancy with the early completion of the fourteenth and last structure. Shown here in background is an $8,000,000 apartment residential area spreading over 25 acres and consisting of four 10-story reinforced concrete buildings and ten 3-story structures. The $12,000,000 shopping and business area will occupy a 40-acre tract in foreground. Stonestown is a project of Stoneson Development Corp.

Big housing projects under way

From a number of cities important slum clearing and public housing projects are announced.

Los Angeles, Calif.—The Housing Authority of Los Angeles has announced the largest public housing project in the city's history—but the war may delay actual construction.

The project, financed from the 1949 Housing Act, for slum clearance and low-rental housing construction, will include 3,350 low-rent multiple dwelling units spread over 278 acres in the Chavez Ravine area. This is west of the Arroyo Seco Parkway and next to Elysian Park.

Dwellings in this area have been declared 98% substandard by the Housing Authority of Los Angeles.

A total of 1,086 families, about 3,612 persons in all, will be affected by the purchase of the building site. Rent will be based upon income, with no family allowed in the project unless its income is below $2,400 a year.

Surveying and appraisals of the property are now under way.

Chicago—The Chicago City Council has approved, after a 10-month controversy, six vacant and seven slum sites for public housing projects under the government's multi-billion dollar housing program. From 11,500 to 15,050 dwellings are to be constructed on the 11 locations and on two previously approved by the Council.

Contracts for the vacant sites are expected to be let before the end of the year. Construction on at least two of the slum parcels may get started early next year.

The council rejected a proposal that the public housing question be submitted to a public vote at the November election.

Plans for the New York Life Insurance Co. 1,404-apartment development in a blighted section of Chicago's South Side have been submitted to the city council by the Chicago Land Clearance Commission. The project on a 101-acre site consists of two 23-story buildings with 1,288 dwellings. The remaining units would be contained in 11 garden apartment structures of two stories.

Cost of the project is estimated at $20,000,000. Because it is on the lake and because of the abundance of parks and play areas, the development will be called "Lake Meadows." Construction is expected to begin next spring. About half of the land already has been acquired. A shopping center and parking facilities for 1,900 cars are planned also.

An architectural feature of the two tall buildings is an outside gallery type corridor on each floor, instead of the convention hallway. These "sidewalks in the sky" will serve as lobbies, porches and recreational areas.

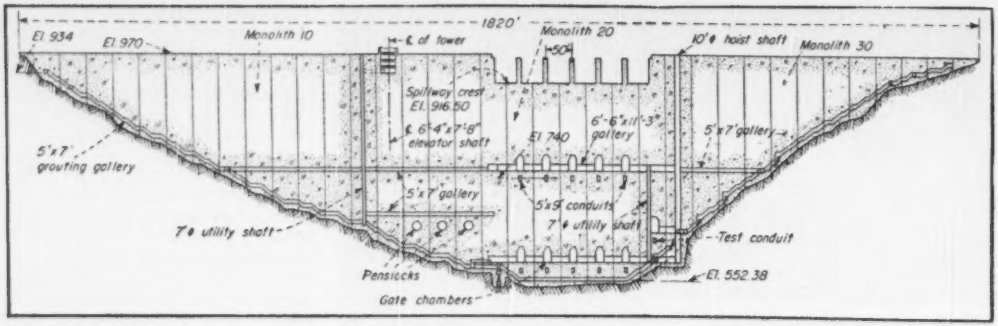
New Orleans, La.—A planning advance of $420,000 has been approved by Administrator Raymond M. Foley of the Housing and Home Finance Agency to assist New Orleans in the plan preparation of a civic center, including a city hall, related buildings, parking facilities and landscaping. The project will cost an estimated $8,550,000.

Much of the 13-acre site for the proposed civic center in New Orleans has been acquired by the city and cleared of old buildings. It will occupy a general area of six squares between Gravier, Loyola, Tulane and Saratoga Streets, and general obligation bonds are to be authorized to finance the project.

Tampa, Fla.—Construction has begun on the first group of a 450-home subdivision to be known as Fairtown Estates on Dale Mabry Boulevard, within four miles of the heart of the city. Minimum size of the plots is 67 x 132 ft.

Houston, Tex.—The news here is negative. Voters rejected public housing with 35,254 votes against it and 21,796 for it. This apparently cancels the building of 5,000 housing units already allocated to the city.

LARGE APARTMENT HOUSE—Work is expected to start this month on a 14-story, 390-unit apartment house at Pennsylvania and Vermont Streets in downtown Indianapolis, Ind. To cost more than $5,500,000, the Essex House, as it will be called, is the result of the planning of Marvin L. Warner and Joseph H. Kanter who are building similar residential developments in St. Louis, Mo., and Birmingham, Ala. Construction engineers are Ammerman, Davis & Stout, Inc., and George Fink is the structural engineer. The structure was designed by Russ & Harrison, Indianapolis architects.



Pine Flat Dam to be built on Kings River in California affords example of . . .

How to Design Openings in Concrete Dams

John B. Alexander
Head, San Francisco Office
D. B. Gumensky
Design Consultant
Knappen, Tippetts, Albert Engineering Co.
New York, N. Y.

TAKING CARE of the stresses around openings in concrete dams has long been a troublesome problem. Obviously the stress pattern in the mass of the structure is broken and distorted by these openings, and maximum values of the resulting stress concentrations occur near them. Usual procedure has been to reinforce for tension at top and bottom of the openings, and to provide compression steel at the sides.

However, in the light of recent experimental work and observations on existing dams, basic assumptions can now be made with more confidence than in the past.

For example, it now seems assurred that the plasticity of the concrete tends to relieve the stresses at points of high concentration and that the average unit compressive stress at failure is about the same in solid concrete specimens as in those pierced with holes.

All available data bearing on this subject were examined in connection with design of Pine Flat Dam, on Kings River, Calif., the highest concrete gravity structure yet undertaken by the Corps of Engineers. Designs, plans and specifications for this dam were prepared by the Knappen, Tippetts, Abbett Engineering Co. under a contract agreement with the Army Engineers.

In the following is presented (a) a summary of factors believed to influence stresses developed around openings in Pine Flat Dam and (b) resultant conclusions as to where steel should be placed around such openings in that structure.

• **Location and kinds of openings**—Pine Flat Dam will be a straight gravity structure with a gate-controlled overflow spillway. Roughly, the height will be 440 ft and crest length 1,820 ft. The dam will be divided into 50-ft monoliths by transverse construction joints. The cross-section will be roughly triangular in shape, with the upstream face vertical for both overflow and non-overflow sections above El 905, and battered at 1 on 0.05 below El 905. The top of the dam will be at El 970. Slope of the downstream face in general will be 1 on 0.78 for both sections. The overflow section will be somewhat heavier than the non-overflow section. The overflow spillway, 292 ft long, will be controlled by six 42x38-ft radial gates.

For flood control and irrigation releases and for sluicing there will be ten 5x9-ft conduits located in the overflow section of the dam. Five of these will be in a row with centers at El 570.0; the remaining five will be in a corresponding row with centers at El 740.0.

Conduit entrance openings at the upstream face of the dam will be rectangles 8 ft 4 in. by 15 ft 0¼ in. in size, reducing to the 5x9-ft section 9.0 ft downstream from the entrance. Each outlet will be controlled by a 5x9-ft sliding service gate operated by a hydraulic cylinder from the gate chamber over the gate. An identical 5x9-ft gate will be placed 8 ft upstream from each service gate for emergency use. An additional emergency closure of the conduit entrance at the upstream face of the dam will be provided by the fixed wheel type structural steel gate, 8 ft 4 in. by 15 ft 0¼ in. in size.

In the initial construction, provision for power facilities that may be installed later will be limited to three 13½-ft steel penstocks passing through the main body of the dam, closed for the present by hemispherical bulkheads. At each penstock intake there will be trashracks, transition from trashracks to two rectangular sections where stop-log gates and service gates will be installed and transitions from the rectangular to the circular sections.

• **Galleries and chambers**—a system of galleries, adits, chambers and shafts will be provided within the body of the dam to furnish means of access to and the space for the operation and maintenance of the accessories and utilities. A 5x7-ft grouting gallery will extend the full length of the dam near its upstream face and just above the foundation. This gallery will furnish access for the grouting of the foundation cutoff curtain and will collect the drainage from the foundation and from the drainage curtain in the body of the dam. It will consist of a series of stair flights and horizontal galleries.

Two horizontal access galleries, at El 584 and El 754, will extend the full length of the dam connecting the grouting galleries in both abutments.

These galleries will give access to ten gate chambers, five in each level, for the operation of the 5x9-ft sluice gates. One gate chamber at El 639 will permit the operation of 5x9-ft slide gate in the test conduit. Access to the grouting galleries from the downstream face of the dam will be through six adits.

In addition to the galleries and chambers, there will be vertical shafts and wells serving different purposes. For example, a 10-ft hoist shaft extending the full height of the dam; a smaller shaft for a passenger elevator will extend from the top of the dam to El 620; two 7-ft utility shafts will be used for electrical conduits, pipes and an emergency ladderway. A 42-in. shaft will serve the recording float gage.

• Stress distribution around openings—Even though the concrete is only partly elastic and develops a considerable plasticity under high stresses, the simplest way to analyze and explain the flow of stresses in a concrete gravity dam is to consider it first as a perfectly elastic body. Both the theory of elasticity and numerous experiments with elastic models, which substantiate the theory, give a clear picture of such stresses.

Briefly, when a load is applied to a large elastic body in which there is an opening, tension and compression stress concentrations will be induced around the opening. If the applied load is a vertical compression, at the top and bottom of the opening, tangential tension will develop with the maximum intensity equal to the average applied unit compression. At the same time compressive stresses will be developed at the sides of the opening with a maximum intensity of three times the average applied compression.

Lateral compression load applied to this body at the same time will induce tension stresses at the sides of the opening and compression at top and bottom. Since the induced tension stress equals the average applied compression and the induced compression stress may equal three times the applied average compression, it is obvious that in order to obtain compression stresses around the whole periphery of the opening the lateral compression stress should be at least equal to one-third of the vertical compression. This rule for circular openings must be modified for openings of other shapes.

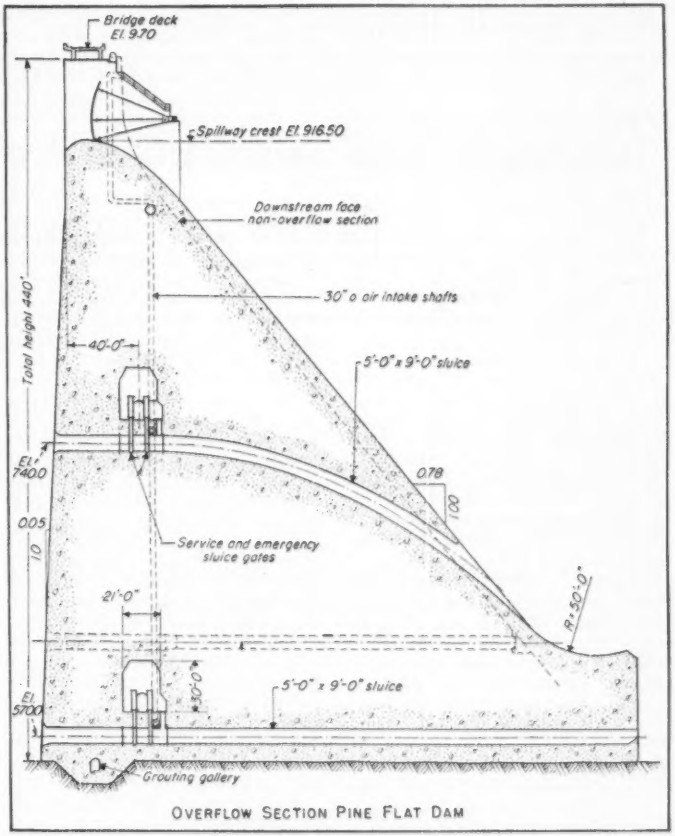
• Two stress conditions—For galleries and chambers running parallel to the axis of a gravity dam near its upstream face, two principal conditions of stress can exist. One condition for "reservoir empty" would place the concrete around the opening under vertical compression stress only, creating concentration of compression at the sides of the galleries with tension at the top and bottom.

This condition would obtain as construction was completed and seldom during operation when the reservoir is empty. The second, or "reservoir full" condition, would obtain in operation when water reaches its maximum level, usually once a year. In this second case the water pressure on the face of the dam will produce the lateral compression which counteracts the tension stress at the top and bottom of the opening. Stress distribution around the gate operating chamber in the Pine Flat Dam is shown on the following page for the two extreme conditions of loading.

In the case of openings running at right angles to the body of the dam the pattern of stress does not appreciably change between conditions "reservoir empty" and "reservoir full," but the intensity and inclination vary with the load. Openings of this type are usually subjected to a vertical or inclined compression stress producing tension at top and bottom of the opening and a concentration of compression at the sides.

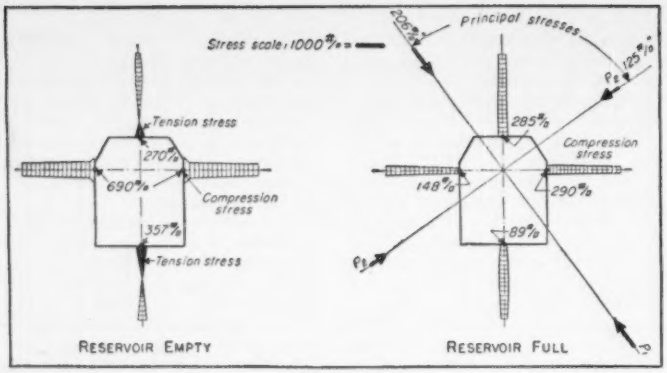
Such openings in the Pine Flat Dam are adits, water release outlets and penstocks. The adits present no particular structural problem; the water release outlets in addition to gravity induced-induced stresses will be subjected to the internal hydrostatic pressures; the 13½-ft openings for penstocks represent a 27% reduction in the load bearing area of the 50-ft monolith and tends to destroy its structural integrity.

The plasticity of the concrete by its yielding under a high stress tends to relieve the intense concentrations of stress around the openings. The U. S. Bureau of Reclamation Structural Re-



OVERFLOW SECTION PINE FLAT DAM

PINE FLAT DAM will be the Corps of Engineers' highest. At this maximum section it is 440 ft. from deepest foundation to top.



STRESSES, for two conditions of loading, around gate chambers 300 ft below top of dam are given graphically in psi.

search Laboratory made a series of tests and studies in regard to the influence of openings in concrete upon its bearing capacity.

Results of these tests are described by R. F. Blanks and D. McHenry in an article entitled "Plastic Flow of Concrete Relieves High-Load Stress Concentrations" (CIVIL ENGINEERING, May 1949).

• **Block's tested**—Eighteen blocks containing openings of various shapes were tested to failure to observe the effect of stress concentrations at the surface of the openings and to measure the reduction in strength of members when subjected to compressive loads of critical intensity. Eight companion blocks without openings and 39 control cylinders were included in the testing program to provide data for strength comparison.

In all cases, failure of the pierced blocks occured when the unit compressive stress upon the minimum section at the sides of the opening approximately equalled the unit stress at failure of equivalent solid blocks from the same batch. Compressive stress concentrations of high intensity were seemingly lacking as demonstrated by the fact that no spalling of concrete occurred at the perimeter of the openings prior to failure. Initial vertical cracks were observed above or below the opening at loads less than the ultimate, but these cracks did not increase in size by any appreciable amount during subsequent load increases nor become part of the major failure system.

• **Where to place the steel**—A summary of decisions as to where to place reinforcing around all openings in the Pine Flat Dam is given in the following:

a. No compressive reinforcement will be provided at any openings. The evidence of observations on openings in existing dams and of laboratory tests on pierced concrete blocks shows that the high compressive stress concentrations indicated by the elastic theory do not develop at the sides of openings. The plastic flow of the overstressed portions in the concrete tends to redistribute the stress over the entire area taking the load. Furthermore, the compressive stress concentrations based on the elastic theory are not high enough to cause failure by spalling.

b. Tensile reinforcement will be generally omitted at all openings parallel to the axis of the dam in the upstream third of the dam. In such openings small cracks (less than .01 in.) would tend to develop at top and bottom for "reservoir empty" condition. With "reservoir full" the lateral water load will tend to close these cracks and reduce the tensile stresses at the top and bottom of these openings. In an elastic body the stress around the entire perimeter of the opening becomes compression when the ratio of the minor to the major principal stress exceeds one-third (both stresses compression).

c. At all unlined openings subject to internal water pressure, reinforcement will be provided to resist the total tension developed at the perimeter by the internal water pressure. No reinforcement will be provided at the sides of openings where compressive stresses equal or exceed the tensile stresses developed by the internal water pressure.

d. At all lined openings subject to internal water pressure bar reinforcement will be provided to resist 90% of the total tension where the lining is not able to take the entire tensile load. Where the lining is strong enough, as a pipe, to resist the full hydrostatic internal pressure, no reinforcement will be furnished unless needed to insure the structural integrity of the monolith and to prevent the formation of injurious cracks. Specifically this condition prevails around the penstock linings.

This analysis, applied to Pine Flat Dam, effected an economy of approximately 2,000,000 lb of steel reinforcement around the openings over the conventional design usually applied to a structure of this type.

• **Personnel**—Plans for Pine Flat Dam were prepared under the general direction of Col. Joseph S. Gorlinski, U. S. Army, district engineer for the Sacramento District, Corps of Engineers. The design, plans and specifications were prepared in the San Francisco office of Knappen, Tippetts, Abbett Engineering Co. under the supervision of John B. Alexander, Pacific Coast representative of the firm, and Paul J. Cannell, office manager. John I. Thomas is project engineer for the Corps of Engineers on the Pine Flat project.

New Compound Available For Rat Control

Warfarin, a compound said to be one of the most effective means of rodent control yet known, has been released for general consumer sale.

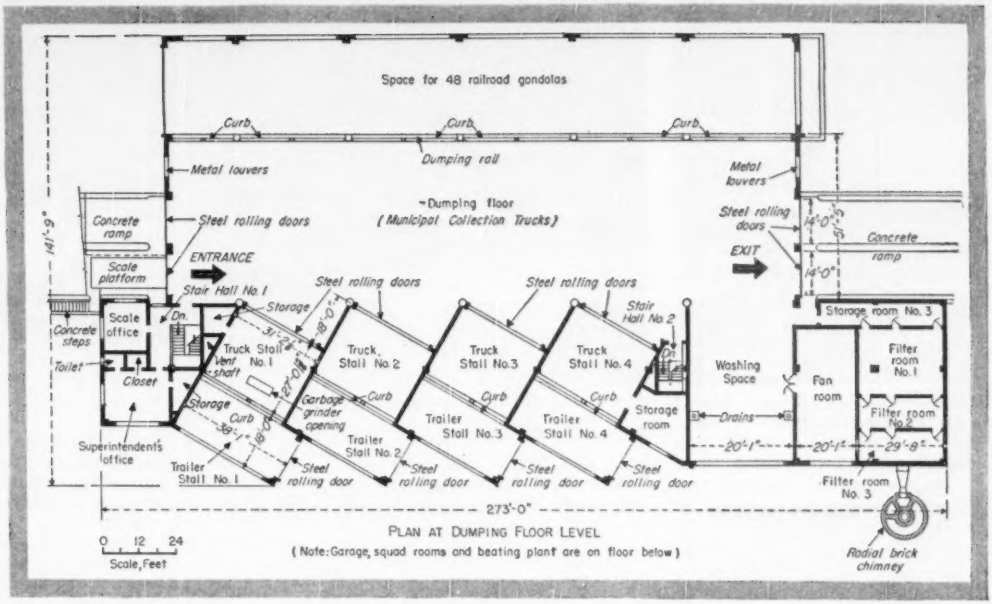
The product was produced under the auspices of the Wisconsin Alumni Research Foundation (WARF) and was formerly known as WARF-42 or Compound 42.

The new rodent killer was developed in the laboratory of Dr. Karl Paul Link of the University of Wisconsin, and kills rats and mice by producing hemorrhage. It differs from most other rodenticides in that it is a slow-acting poison and must be consumed by the roden over several days time.

However, developers say that the chemical is tasteless and odorless to rodents and they do not develop bait shyness but continue to eat bait until enough has been consumed to cause death. For this reason, Warfarin rodenticides will, in most cases, successfully control a rat and mouse population and serve to prevent a rebuilding of that population by killing newcomers as they arrive.

An outstanding advantage is relative safety for humans, pets and domestic animals.

The product is protected by a patent owned by the Wisconsin Alumni Research Foundation, and is handled by the S. B. Penick & Co., and R. J. Prentiss & Co., Inc., both of New York City.



MUNICIPAL refuse-collection trucks, weighed-in at the left, maneuver on the dumping floor to dump either into gondolas or tractor-trailers. Dust and odors are kept down by a ventilation system with filters and activated carbon.

Refuse Transfer Is Odorless and Dustless

When Congress passed enabling legislation for a refuse-transfer station within a few thousand feet of the U. S. Capitol and the Senate and House office buildings, it wrote a proviso into the law that the structure be equipped for odor and dust control. William A. Xanten, superintendent of the Division of Sanitation, Washington, D. C. tells how this order was carried out.

FOOLPROOF dust and odor control was designed and built—for the first time on large-scale—into Washington's refuse-transfer station. The reason: The station is located within nostril-reach of laboring congressmen.

Designed to remove 95% of all offensive odors, the equipment for odor absorption, air filtration and cycloning cost only $37,400. This is but a small portion of the $918,700 total cost for the building, spur track, and engineering. The station is a receiving point for refuse collected in the central part of the city.

• **Unloading and re-loading**—For bulk shipment, a transfer floor (plan) accommodates gondola railroad cars on one side and tractor-trailers on the other. Municipal and private collection trucks enter the central section over a platform scale at one end and leave at the opposite end. All incoming refuse is weighed.

Four gondolas may be lined up at one time along the dumping rail. And four more cars may be run in on a parallel track, all within the building.

Four separate 3 to 4-truck capacity stalls in a saw-tooth layout are on the south side of the building. Within them, refuse is deposited into the trailers.

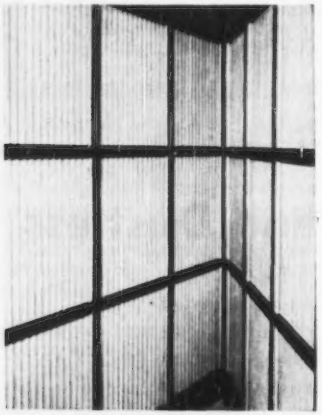
The stalls are sealed off by in-

TRANSFER STATION—SPECIAL EQUIPMENT

Hot Water Storage Tank—500 gal (Make—Richmond Engineering Co.)
Boiler—Hot Water 72 hp; capacity 20,000 ft radiation (Make—Kewanee)
Stoker—Coal (Make—Iron Fireman)
Garbage Grinder—Size: 40 hp Motor—1,800 rpm water capacity 60 gpm, capacity 10 tons per hour, weight—7,000 lbs (make—Jeffrey)
2-Dust Collectors—Capacity, 13,400 cfm each (Make—American Blower Corp.)
2-Dust Control Fans—Duty, output 13,400 cfm (Make—American Blower Corp.)
Odor Control Fan—Duty, output 58,500 cfm (Make—American Blower Corp.)
Dust Filters—Fiber glass; each filter unit 24 in. square by 9 in. deep (Make—American Air Filter Co., Inc.)
Air Recovery Equipment—2,340 carbon canisters for odor fan; 540 for each dust fan 342 spares; a total of 3,762 canisters (Make—W. B. Conner Engineering Corp.)
Truck Scale—Capacity, 40,000 lbs; Size, 24 ft long, 10 ft. wide (Make—Fairbanks)

UNDER ONE ROOF. Refuse is dumped directly from the main platform into gondolas for bulk shipment to landfills. Or garbage for hogs is put into trucks.

HEAVY EQUIPMENT is stored in the garage below the operating floor level.



FILTER ROOMS have spun glass frames.

CANISTER ROOM—Activated carbon in canisters controls odors. Each canister can deodorize 25 cfm of air.

terior and exterior electrically operated overhead doors when ashes and other dusty refuse is dumped. Stalls are thoroughly exhausted of dust before the doors are opened.

Additional facilities include: A truck-washing room, a garage under the dumping platform for truck and trailer storage, squad rooms and locker and shower rooms for garbage-service employees.

• **Divide for economy**—To facilitate odor and dust control, the building was divided into two sections. Space under the main transfer platform was reserved for the garage, heating plant and squad rooms and facilities. The upper or main portion of the building (see plan)—where refuse is unloaded and re-loaded—has a ventilation system that actually treats air.

The air treatment system is simple: It consists of fans, dust cyclones, filters, carbon canisters and chimney discharge.

The fans are big ones. Operating at 85,300 cfm, they can change the air in the upper story about seven times per hour. The breakdown is 26,800 cfm in the trailer stalls (dust) and 58,500 cfm in the railroad-siding section (odor). Intake louvres are designed to concentrate most of the capacity as near as possible to the source of dust as well as at all doors of the building.

Air drawn from the trailer stalls is passed through cyclones to minimize dust content. It then goes to spun-glass filters and carbon-canister room. There are 3,420 canisters, each capable of handling 25 cfm of air.

When treatment is not required, the air may be bypassed in the ventilating system directly to the chimney.

The chimney is 100 ft high. It's divided vertically into four sections (plan). The circular center duct receives air from the heating system. The outer annular space is divided into three ducts for 45 ft of the height. The largest outer duct is connected to the fans ventilating the "odor" side of the building. The other two take the air output from the dust-control fans (trailer stalls).

• **Not much air treatment**—Spun-glass filters and activated carbon were employed for final air treatment because the odor-and-dust control system will be operated only a small percentage of the time. But when it's needed, it will be highly effective in suppressing a potential nuisance.

Most of the refuse delivery is concentrated in the middle of the day. The odor problem is of the most concern in the summer and the dust hazard is greatest in the winter (ash season).

Experience under actual operating conditions over several months has

After-Project Improvements

Since the erection of this station the municipality has discontinued the operation of its Garbage Reduction Plant which was located on the banks of the Potomac River at Cherry Hill—about 35 miles south of Washington along the line of the R.F. & P.R.R.—and instituted in lieu thereof at this location a sanitary fill for the handling of non-combustible refuse, garbage and large dead animals. Rail shipments of straight garbage have been practically discontinued and a somewhat larger percentage of municipally collected garbage is now turned over to pig-feeders. Also, a ten-ton per hour garbage grinding unit was installed in the transfer station to handle miscellaneous garbage-disposal problems.

proven the system to be both flexible and highly satisfactory in its performance.

• **Cleanliness encouraged**—Another feature—conducive to maintaining a clean station—is ample facilities for hosing and washing down. Standpipes are at the entrance of each trailer stall and other convenient points throughout the station.

Drainage from the main dumping platform will permit washing down without fear of clogging. All drains are guarded by catchbasins.

The main station is heated radiantly from the platform slab except the office and weigh room. Individual units are supplied for the basement rooms.

• **Central location**—The station is centrally located in the District of Columbia, reducing truck haul for collection units operating in the heart of the city. It also enables transfer of garbage and refuse from collection trucks to tractor trailers, railroad gondola cars and pig-feeder vehicles under nuisance-free conditions.

• **Disposal sites distant**—Designed primarily for garbage transfer, the station is also a point of bulk shipment for other types of refuse such as incinerator residue, street sweepings, ashes, and other non-combustibles. This becomes an important cost factor as landfill sites must be moved farther and farther away from the center of the city.

As a measure of the magnitude of the transfer operation, the average daily quantities of refuse to be handled at the station (on a monthly basis) are given in Table I. The quantities listed are not total production for the city. With the exception of municipally collected garbage, which is all hauled to this station, the incoming loads are from limited areas of the city.

• **The refuse problem**—The District of Columbia has a big refuse-disposal problem. Last year's total production is given in Table II.

Reduction of this large volume of waste—by every possible means without resorting to low ground—is the policy rigidly followed in the District. This requires incineration of as much of the combustible material as possible, the practice of feeding garbage to pigs, composting of leaves and utilization of ashes and cinders for various purposes by public and private agencies.

Even with application of all of these disposal methods, dumping must be employed for about 25% of the yearly refuse production. The breakdown of material dumped is given in Table III.

• **Staff**—The preliminary plans and layout for the transfer station were worked out by the Division of Sanitation, Department of Sanitary Engineering. The final design and specifications were by the District of Columbia municipal architect.

The dual problem of controlling both odor and dust with heavy daily concentrations of refuse and relatively large volume of air to be handled was a matter of some concern to the District's officials. It required special study and some pioneering. In this, they were assisted by Greeley and Hansen, Chicago consulting engineers, who reviewed the preliminary design.

The odor-control equipment was designed and supplied by W. B. Connor Engineering Corp., New York City. The project was built by Cramer-Vollmerhausen Co., Inc., of Washington.

TABLE I—NUMBER OF LOADS TO BE TRANSFERRED PER DAY

(Near Future Conditions)

Refuse Transfer Station, Washington, D. C.

	Incoming Trucks					Outgoing Gondola Cars, Farmers' Trucks and Trailers		
						Garbage By		
Month	Garbage	Street Refuse	Ashes	Incinerator Residue	Total	Gondola Cars	Farmers Trucks	All Other Refuse By Trailers
Jan.	101	70	56	13	240	2	89	28
Feb.	84	70	56	13	223	2	73	28
Mar.	84	70	55	13	222	2	73	28
Apr.	84	72	45	13	214	2	73	28
May	83	76	29	13	201	2	72	28
June	106	67	21	13	207	3	77	20
July	128	87	15	20	250	3	80	24
Aug.	123	80	13	16	232	3	81	22
Sept.	132	81	21	17	251	3	97	24
Oct.	90	119	30	16	255	2	73	33
Nov.	101	121	42	15	279	2	87	36
Dec.	85	89	57	15	246	2	70	32

TABLE II—REFUSE PRODUCTION

District of Columbia

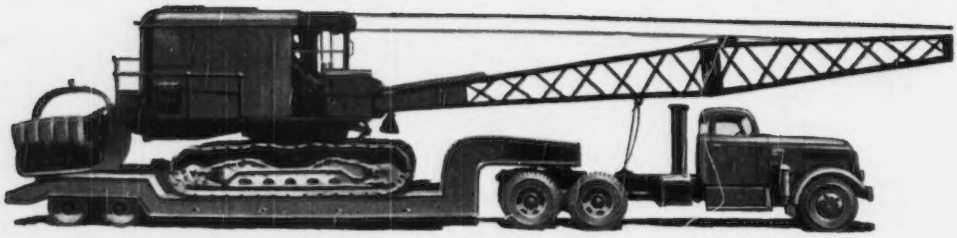
July 1, 1949 to June 30, 1950

Item	Loads	Cu Yd
Street & Alley Sweepings	34,435	264,975
Ashes & Miscellaneous non-combustibles	54,614	517,484
Garbage	31,501	190,000
Combustible Refuse	281,067	3,128,612
Total	401,617	4,101,071

(Note: The above does not include dead animals, excavated or dredged material or large trees and stumps. While the municipality exercises control over the disposal of all solid wastes, a large percentage of the above production is from industrial, commercial and U. S. Government sources and is not collected by the municipal forces.)

TABLE III—RESIDUAL WASTES DISPOSED OF BY DUMPING

Street and Alley Sweepings	185,000 cu yds
Ashes & Miscellaneous non-combustibles	490,000 cu yds
Residue (from incineration of combustibles)	312,000 cu yds
Total	987,000 cu yds



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These six-wheeled giants can move just about anything anywhere. The 197-inch wheelbase tractor, with Gross Combination rating of 90,000 lbs., covers a tow-load factor of more than 72,000 lbs. Or use the 215-inch wheelbase for conventional truck service — you can handle body and pay load up to 37,000 lbs.

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The four dual driving rear wheels mean traction — assure full control of the load. With the "heavy end" riding on eight tires, concern over delays from tire failure vanishes. And the same eight tires let you run this equipment over soft ground or sand — no more off-the-road headaches.

For covering distance—these heavyweights really move. With standard transmission equipment, they carry maximum loads easily at 35 mph. For working on grades, their Diesel power, 5-speed main transmission and 3-speed auxiliary provide a flexibility that is a revelation.

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Engines in these trucks are those famous GM 2-cycle Diesels — the same power plants that are revolutionizing the commercial hauling field by speeding up schedules and slashing fuel costs.

It's *power on every downstroke* that pays off with the 2-cycle job — and packs such a wallop in such a

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FROM ½ TO 20 TONS

compact engine. The trim lines of the GMC's engine result from the Unit Injectors that eliminate bulky high pressure fuel systems with oil pumps, manifolds and distributors.

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Ranging from ½ to 20 tons — with gasoline or Diesel power — GMC trucks are all *real* trucks — the *most economical transportation* money can buy!

RIVER BEND at Beaumont, Tex., loops around improved ship-repair yard.

Rebuilt Yard Rebuilds Ships

- **Heavy duty drydock pier has reinforced concrete deck system**
- **Sheetpile-bulkhead anchorage is a continuous deadman beam**

Felix A. Ciampa
Harder, Barbato and Ciampa
New York, N. Y.

EVERY DAY (except Sundays) for the past several months, a newly-repaired ship has gone back into the waters of the Neches River at the Bethlehem Steel Company made-over Beaumont, Texas, yards.

A new bulkhead and drydock-mooring pier make the yard capable of meeting an essential for local shipping interests—fast turn around time on repair work. During the war, the yard (purchased by Bethlehem in 1948, but in operation since 1918) turned out a steady stream of tankers, tugs, barges, minesweepers and repaired cargo vessels and tankers.

Immediately after purchase, the steel company began an extensive modernization program that included additions to the existing 280-ft bulkhead, extension of the marine railway, dredging and otherwise enlarging the hook-shaped repair basin.

Of steel sheetpiles, the new bulkhead is 1,100 ft long, with a dredged basin 20 ft deep. Parallel to it is the new mooring pier, 615 ft long by 37 ft wide, exclusive of the fendering system, on the north side of which ships are serviced. A 15,000-ton floating drydock lies along the south side of this pier. The dredged depth is 44 ft in the dry-dock basin and 25 ft on the north side of the pier. Both pier and bulkhead have complete utilities-connection systems, for servicing ship-repair work.

• Pier designed for heavy loads—The pier-deck is designed for heavy loads. Wherever deck space is available for temporary storage a live load of 1,000 psf was used. Beams, pile caps and piles were designed for wheel loads, plus a live load of 500 psf on contributory loaded areas. (The heaviest moving load is an eight-wheel gantry crane. Each wheel load is 69 kips, to which has been added an impact of 10%.)

Because of the nature of the pier, its permanence, its many utilities and the heavy live loads, the deck is of reinforced concrete, supported by H-pile sections driven into the river bottom. The bottom consists of layers of fine sand interspersed with layers of clay of varying thicknesses. The piles are 14-in. 73-lb H sections driven to support 55 tons. Each pier bent consists of twelve H-piles driven plumb in pairs 3 ft apart. Two batter piles lie between the two planes established by the plumb piles. No driving shoes were used. The top of each bearing pile was cut off 5 ft 6 in. above mlw and finished with a welded cap plate 1¼ in. thick. The flanges and web were drilled below the cap plate to admit four 1-in. round bars, 2 ft long for anchoring the pile to the concrete pile caps.

• Caps reinforced—The pile caps are of heavily reinforced concrete 3 ft 3 in. deep and 6 ft wide. Twelve mooring beams 3 ft 3 in. deep and 2 ft 6 in. wide, of reinforced concrete, are framed into the ends of the pile caps to support guides by which the floating dry dock is moored.

The deck consists of an 8-in. reinforced-concrete slab, which frames into heavy reinforced-concrete stringers. The overall depth of deck construction is 3 ft 9 in. The continuity of the deck slab is interrupted over stringers by slots 7¾ in. deep, to receive railroad rails for a locomotive crane, and by slots 7 in. deep for the gantry-crane rails. A slot 1 ft 4 in. wide by 2 ft 6 in. deep also is provided to receive an electrified third rail for the gantry crane. Several manholes are provided in the deck to give access to utility pipes and cable below.

The east end of the pier widens in two steps to meet the existing bulkhead. This portion of the pier or high-water platform is designed for a live load of 500 psf. The deck for this platform consists of a 10-in. reinforced concrete slab and 3-ft 9-in.-high reinforced-concrete girders supported on 14-in. H-piles. Similar construction was used to widen the existing pier-base bulkhead area 20 ft toward the drydock. At the southern end of the widened bulkhead is a one-story building that contains pumps, transformers, and other mechanical equipment.

• Bulkhead construction—The 1,100-ft bulkhead along the north side of

the ship basin is of 57-lb Z-type steel sheet piles. The sections were 56 ft long, and were driven to maintain top of wall at +11.0 mlw. The basin in front of the bulkhead is dredged to −20 mlw. (The material into which the sheet piles are driven is sand with some clay streaks, while the material back of the wall is sand with thick layers of gumbo.) The sheetpiles of the entire bulkhead are capped with a continuous 15-in. channel, bolted to the top of the sheetpile.

Each sheet is bolted to the wale with a 1¾-in. bolt and the wale itself is tied back to an anchorage—at 9-ft intervals—by 3¼-in. dia rods upset to 4 in. at ends and at turnbuckles. Where the bulkhead supports bollards, a specially-designed steel shelf is attached to the back of the sheetpiles and a 2¼-in. dia rod transfers the bollard pull to the anchorage.

• **Anchorage is continuous beam**—The anchorage is located 60 ft 4 in. back of the sheetpile face. It consists of a continuous reinforced-concrete wall of trapezoidal cross section 6 ft high, 5 ft bottom width and 1 ft 6 in. top width. The beam bears on 12-in. H piles 63 ft long, spaced at 4 ft 6-in. centers. Creosoted timber batter piles 40 to 45 ft long on 4 ft 6-in. centers midway between vertical H-piles, at a slope of 30 deg with the vertical, and with the tops embedded in the concrete anchorage, complete this detail.

At the east end of the web basin, an existing steel sheetpile bulkhead had its channel cap twelve inches below the new yard elevation. This difference was made up by pouring a 12 x 15-in. concrete cap, anchored to the back of the channel by welded hairpin reinforcing rods.

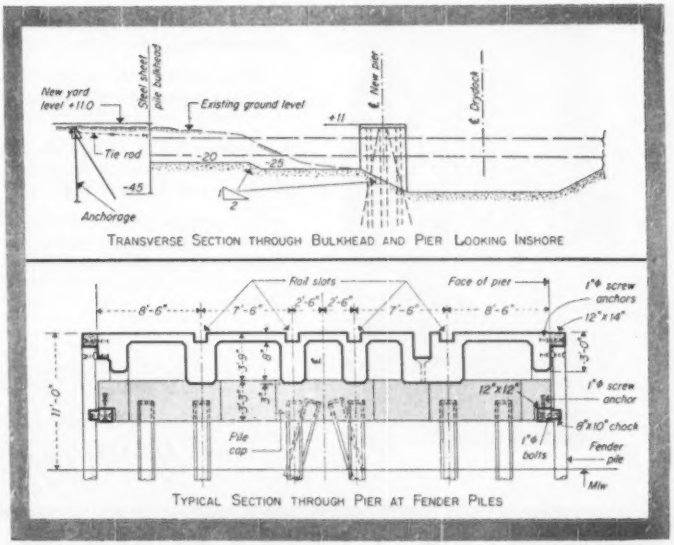
• **Piledriving experience**—Borings at the site of the pier indicated a layer of stiff slightly sandy clay from 35 to 47 ft below mlw, and below that to a depth of 81 ft a layer of dense fine sand with occasional seams of silty or clayey sand overlying a stratum of stiff sandy clay. The length of the 14 in. H-piles was determined by the requirement that the tips should be embedded in the sand stratum. The Engineering News formula for pile load capacity was used, and in only a few instances the required bearing of 55 tons was not indicated. It seemed improbable, where several piles in one bent fetched up at planned penetration, that an adjacent pile should require a greater depth, especially since the borings indicated reasonably uniform sub-surface conditions. Load tests then were conducted, and in each instance questionable piles were found to have the desired carrying capacity.

Load tests were made by jacking against I-beams, which were connected to two adjoining piles serving as reactions. Under load tests ranging from 85 to 94 tons, the net settlements after rebound were between 0.001 ft and 0.007 ft—very satisfactory results. The penetration of these piles into the dense fine sand stratum was about 32 ft 6 in.

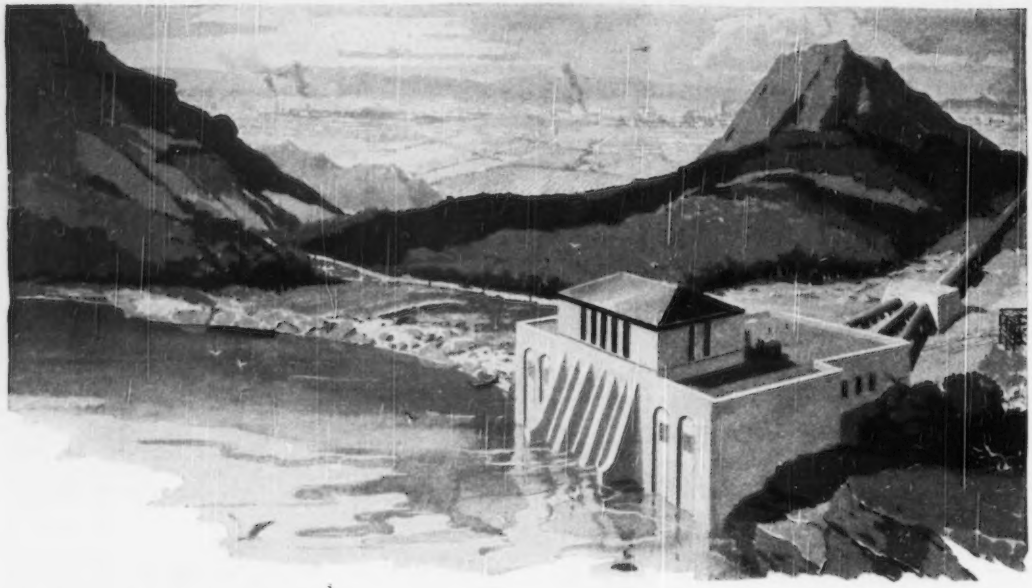
No trouble was encountered in driving the sheetpiles for the new bulkhead wall. When subsequent dredging to 20 ft had been completed, there was no lateral displacement.

The bulkhead, mooring pier and sub-station building were designed in the office of Harder, Barbato & Ciampa of New York City, with the author in charge of this work. Ralph M. Rice and A. C. Youngson, associated with this organization, handled the architectural and mechanical work, respectively. Acting for the Shipbuilding Division of Bethlehem Steel Company was E. M. Burke, Construction Engineer.

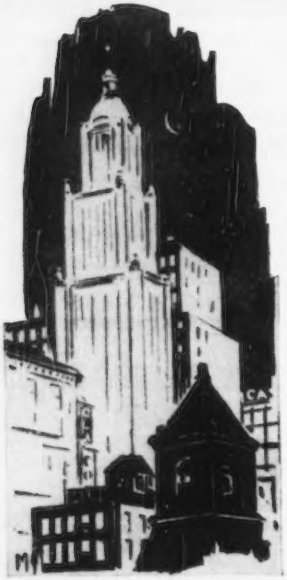
SHEETPILE BULKHEAD will be tied back to beam in foreground, by 3¼-in. rods connecting bulkhead wale (at edge of excavation for rods) with holes in beam. Material outside bulkhead dredged after rod tie-in.



CROSS SECTION of new facility (top) shows ground level that existed in bulkhead area before construction. Typical pier section (bottom) shows how stringers were located to carry crane and locomotive rails.



WHEN Millions Live As One



ADVENTURESOME folk, since the beginning of time, have migrated . . . Settling in tiny clusters . . . Spreading spider-web fashion to dot the land with villages and towns . . . While others pressed forward, facing dangers concealed behind each rock and tree!

But with the growth of cities, new perils arose and multiplied . . . People were living too closely together . . . Epidemics and pestilence exacted their toll . . .

Then science and modern machinery rescued them from exposure to disease emanating from impure water and unsanitary waste disposal . . . And, today, *millions live as one!*

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How Lighting Systems Are Designed

Robert L. Zahour
Electrical Engineer
Commercial Engineering Dept., Westinghouse Electric Corp.
Bloomfield, N. J.

WHEN IT IS NECESSARY to estimate the number of lamps and fixtures and the wiring capacity needed for a lighting installation, building designers will find the following method helpful. Basic considerations were presented in "Plan for Quantity and Quality in Lighting," ENR July 6, p. 42 and "Light Control," ENR Aug. 3, p. 38. If great accuracy is desired, designers should refer to the more extensive tables given in such manuals as the "Illuminating Engineers Society Lighting Handbook" or the "Westinghouse Lighting Handbook" or consult a lighting expert.

1. Set illumination level—Table I lists lighting intensity recommended for commercial and industrial interiors.

2. Select luminaires—Lighting systems are classified as direct, semi-direct, general diffuse or direct-indirect, semi-indirect and indirect. Offices generally can be well lighted with direct-indirect or semi-indirect systems, manufacturing areas with a direct system and merchandising areas with one or more systems. Decision as to luminaire best suited to a given application depends on seeing tasks to be performed and characteristics of the area to be illuminated.

3. Look up lumen output—Table II gives the lumen output of various types of lamps.

4. Determine room index—Painted walls and ceilings absorb light. The smaller the room the greater the percentage of lumens lost, depending on the distribution characteristics of the luminaire used. Room index is a measure of the absorptive properties of a room. Values for various sizes of rooms are given in Table III. For direct, semi-direct, general diffuse and direct-indirect equipment, the mounting height serves as a guide, while for semi-indirect and indirect luminaires, the ceiling height should be used.

5. Find coefficient of utilization—The ratio of the lumens reaching the working plane to the total lumens generated by the lamps, known as the coefficient of utilization, is a factor that takes into account the efficiency and distribution of a luminaire, its mounting height, room proportions and reflection factors of walls and ceiling. Coefficients are given in Table IV for a few types of luminaires. The table can be used also for other luminaires if distribution and efficiency are about the same. Care must be taken that average reflection factors are employed for walls and ceiling, since reflectances depreciate from initial values with time.

6. Estimate maintenance factor—In the operation of any lighting system, there are three principal depreciation factors that affect the light output: (1) Loss in light output of the lamps, which might be as much as 20 to 25% at the end of rated lamp life. (2) Loss due to accumulated dirt on the reflecting or transmitting surfaces of the luminaire and lamps. (3) Loss of reflected light through accumulation of dirt on walls and ceilings; this loss factor is taken into consideration when selecting the coefficient of utilization. Table IV gives maintenance factors for

TABLE I—RECOMMENDED FOOT-CANDLE LEVELS FOR SEEING TASKS

Lighting Applications	3 to 7 Rough Work Intermittent	7 to 15 Rough Work Continuous	15 to 30 Casual Seeing Tasks	30 to 70 Critical Seeing Tasks	70 to 150 Special Applications	150 to 300 Special Applications	300 to 700 Special Applications	700 to 1500 Special Applications
Offices Schools Public Bldgs.	Auditoriums Dance Halls Corridors Dining Rooms Storage Rooms	Museums Kitchens Library Stacks Armories Art Galleries Auditoriums Cafeterias Recreation Rooms Elevators Garage Storage Theater Foyers Laboratories Storage Rooms Locker and Shower Rooms	Exhibitions Bank Lobbies Bulletin Boards Club and Lounge Rooms Court Rooms Gymnasium Casual Reading Casual Writing General Labs. Hospital Lobbies Hotel Kitchens Vaults Mail Rooms Study Halls	Auto Show Rm. Bank Cages Beauty Parlors Barber Shops Billiard Tbl. Bowling Alleys Classrooms Drafting Rms. Garage Repair Shop Children's Study Sewing Rms. Manual Training Labs — Close Work Offices Food Displays (Cafeterias)	Amateur Boxing Rings Dark Poster Boards Art Glass Windows Examination Rm. (Prof.) Manual Training (Close Wk.)	Prof. Boxing Ring Dark Art Glass Windows Operating Table — Minor Operations Dental Chairs	Boxing Ring (Championship)	Operating Table — Major Operations
Stores Show Windows		Stock Rooms	Circulation Areas	Gen. Merchandising Areas	Show Cases Wall Cases	Show Windows (side streets) (dark surrounding) Display Niches Feature Displays	Show Windows (main streets) (bright surrounding)	
Industrial	Corridors Packing Loading Shipping Washrooms Washrooms	Foundry Wk. General Processing Shearing Pressing Rough Wk.	Automatic Machinery General Assembly Sewing Type Setting	Fine Assembly Machinery Inspection Proof Reading	Very Fine Assembly Color Inspection	Color Analysis and Matching		Welding (Point of Work)

three conditions: G–where the air is free from dust and luminaires and lamps are cleaned frequently and lamps replaced systematically; M–where dusty atmospheric conditions exist, luminaire cleaning is infrequent and lamps are replaced only after burnout; and P–where the atmosphere is very dusty or smoky and equipment is seldom cleaned.

7. Compute lamps required–The number of lamps needed is obtained by dividing the product of foot-candles and working area by the product of lumens per lamp, coefficient of utilization and maintenance factor. The number of luminaires required is found by dividing the number of lamps by number of lamps per luminaire.

8. Make a layout–Table IV also gives the maximum spacing for luminaires. Luminaire spacings are controlled by light distribution of the equipment, bay dimensions and mounting height of units. They should be selected so as to produce uniform illumination and prevent bad shadows. In general, when individual units are used, bays that are approximately square should be lighted with one unit in the center of each, or with four units, each in the center of the four quadrants of the bay.

9. Determine wiring capacity–In the design of lighting systems, wiring should be adequate to yield best lamp performance. Lamps operated below their design voltage have an appreciably reduced light output. The chart indicates wiring capacities in watts per square foot of floor area to provide given foot-candle intensities for several types of luminaires.

TABLE II — LAMP DATA

INCANDESCENT

Watts	Bulb	Base	Finish	Rated Avg. Life (Hours)	Initial Lumens
General Service Lamps					
100	A-21	Med.	I.F.	750	1630
150	A-23	Med.	I.F.–Cl.	750	2600
200	PS-30	Med.	I.F.–Cl.	750	3700
300	PS-30	Med.	I.F.–Cl.	750	5900
300	PS-35	Mogul	I.F.–Cl.	1000	5650
500	PS-40	Mogul	I.F.–Cl.	1000	9950
750	PS-52	Mogul	I.F.–Cl.	1000	15,500
1000	PS-52	Mogul	I.F.–Cl.	1000	21,500
1500	PS-52	Mogul	I.F.–Cl.	1000	33,000
Projector and Reflector Lamps					
75	PAR-38	Med. Skt.	Projector Spot	1000	450 (0–15°)
75	PAR-38	Med. Skt.	Projector Flood	1000	550 (0–30°)
150	PAR-38	Med. Skt.	Projector Spot	1000	1050 (0–15°)
150	PAR-38	Med. Skt.	Projector Flood	1000	1300 (0–30°)
75	R-30	Med.	Reflector Spot	1000	160 (0–15°)
75	R-30	Med.	Reflector Flood	1000	235 (0–30°)
150	R-40	Med.	Reflector Spot	1000	700 (0–15°)
150	R-40	Med.	Reflector Flood	1000	700 (0–30°)
300	R-40	Med.	Reflector Spot	1000	1270 (0–15°)
300	R-40	Med.	Reflector Flood	1000	1400 (0–30°)

MERCURY

Designation	Watts	Bulb	Base	Ballast Loss Per Lamp	Rated Avg. Life (Hours)	Initial Lumens
A-H1	400	T-16	Mogul	40 watts □	4000	16,000
A-H12	1000	T-28	Mogul	85 watts □	2000	60,000
A-H9	3000	T-9½	S.C. Term.	165 watts △	5000	120,000

FLUORESCENT

Bulb	Watts	Base	Rated Avg. Life (Hours)	Rated Initial Lumens: White	4500 White	Daylight
Preheat Lamps						
33" T-12	25	Med. Bipin	7500	1430	1370	1210
48" T-12	40	Med. Bipin	7500	2480	2370	2100
60" T-17	85	Mog. Bipin	7500	4600	4400	3900
Slimline Lamps						
42" T-6	18	Single Pin	6000	1070	1020	900
	25	Single Pin	6000	1425	1360	1200
	33	Single Pin	6000	1800	1720	1530
64" T-6	27	Single Pin	6000	1690	1610	1430
	39	Single Pin	6000	2300	2200	1950
	51	Single Pin	6000	2900	2760	2460
72" T-8	26	Single Pin	6000	1710	1640	1460
	38	Single Pin	6000	2420	2310	2060
	51	Single Pin	6000	3170	3030	2700
72" T-12	59	Single Pin	6000	3660	3500	3100
	72	Single Pin	6000	4300	4100	3660
96" T-8	34	Single Pin	6000	2280	2180	1940
	51	Single Pin	6000	3300	3150	2800
	69	Single Pin	6000	4350	4150	3700
96" T-12	75	Single Pin	6000	4800	4575	4080
	96	Single Pin	6000	5800	5540	4925

TABLE III — ROOM INDEXES

Semi-indirect and indirect Luminaires	CEILING HEIGHT (FEET) 9 to 9½	10 to 11½	12 to 13½	14 to 16½	17 to 20	21 to 24	25 to 30
Direct, Semi-direct, General Diffuse, Direct-indirect Luminaires	MOUNTING HEIGHT ABOVE FLOOR (FEET) 7 to 7½	8 to 8½	9 to 9½	10 to 11½	12 to 13½	14 to 16½	17 to 20
ROOM WIDTH* (Feet)	**ROOM LENGTH* (Feet)**	**ROOM INDEX**					
10	10–14	G	H	I	J	J	
	14–20	G	H	I	J	J	J
	20–30	F	G	H	I	J	J
	30–42	F	G	G	H	I	J	J
	42–60	E	F	G	H	I	J	J
20	20–30	D	E	F	G	H	I	J
	30–42	D	E	E	F	G	H	I
	42–60	D	D	E	E	F	G	I
	60–90	C	D	E	E	F	G	H
	90–140	C	D	D	E	F	F	H
30	27–42	C	D	D	E	F	G	H
	42–60	C	C	D	D	F	F	H
	60–90	B	C	C	D	E	F	G
	90–140	B	C	C	D	E	E	F
50	46–60	A	A	B	C	D	E	F
	60–90	A	A	B	C	C	D	F
	90–140	A	A	A	C	C	D	E
	140–200	A	A	A	C	C	D	E

*For areas with dimensions greater than those shown in the table, use the following procedure to determine the room index:

1. Divide length and width by some common number which reduces dimensions to values within limits of table.
2. Subtract 2½ ft. from the mounting height (or ceiling height) and divide this dimension by same divisor used in step 1.
3. Add 2½ ft. to reduced height dimension and select the room index from the above table according to these new dimensions.

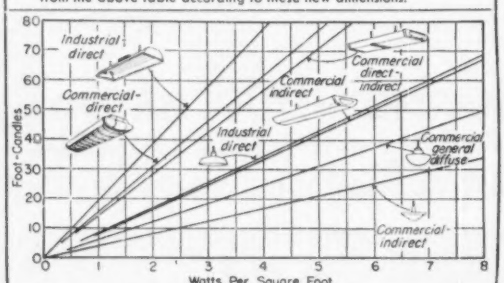


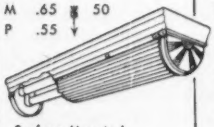
CHART relates wiring capacity with light output of various luminaires.

TABLE IV — COEFFICIENTS OF UTILIZATION FOR TYPICAL LUMINAIRES

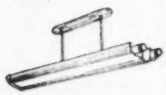
DIRECT LIGHTING

LUMINAIRE	Spacing not to exceed	Ceiling	75%		50%	
		Walls	50%	30%	50%	30%
		Room Index	COEFFICIENT OF UTILIZATION			
MF G .75 M .65 P .55 — 1 x MH — 0 — 79 R.L.M. Dome Reflector		J	.37	.31	.36	.31
		I	.45	.41	.45	.40
		H	.49	.45	.49	.45
		G	.53	.49	.53	.49
		F	.56	.53	.55	.52
		E	.61	.58	.60	.57
		D	.66	.63	.64	.62
		C	.67	.65	.66	.64
		B	.71	.68	.69	.67
		A	.72	.70	.71	.68
MF G .65 M .55 P .45 — 1 x MH — 0 — 79 Two 40-Watt Lamps		J	.38	.32	.37	.32
		I	.47	.42	.46	.41
		H	.51	.47	.50	.47
		G	.55	.51	.54	.51
		F	.58	.54	.57	.53
		E	.63	.60	.62	.59
		D	.68	.64	.66	.64
		C	.70	.67	.68	.65
		B	.73	.70	.71	.68
		A	.74	.72	.72	.70

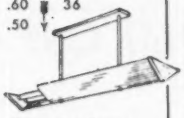
SEMI-DIRECT LIGHTING

MF G .75 M .65 P .55 — 1 x MH — 8 — 50  Surface Mounted, Two 40-Watt Lamps		J	.21	.17	.20	.16
		I	.26	.22	.25	.21
		H	.29	.25	.28	.25
		G	.32	.28	.30	.27
		F	.34	.30	.33	.30
		E	.38	.34	.36	.33
		D	.41	.37	.39	.36
		C	.42	.39	.41	.38
		B	.45	.42	.42	.40
		A	.47	.44	.45	.42

SEMI-INDIRECT LIGHTING

MF G .70 M .65 P .60 — 1.2 x CH — 66 — 20 Totally Enclosed		J	.20	.16	.16	.13
		I	.24	.20	.20	.17
		H	.28	.24	.23	.19
		G	.31	.27	.26	.22
		F	.34	.30	.28	.24
		E	.38	.34	.31	.27
		D	.42	.38	.34	.30
		C	.45	.41	.36	.32
		B	.49	.45	.39	.36
		A	.51	.47	.41	.38
MF G .60 M .50 P .40 — 1.2 x CH — 70 — 11  Two 40-Watt Lamps		J	.18	.14	.14	.11
		I	.22	.19	.17	.15
		H	.26	.22	.20	.17
		G	.29	.25	.22	.19
		F	.32	.28	.24	.21
		E	.35	.32	.27	.24
		D	.39	.35	.29	.26
		C	.42	.38	.31	.28
		B	.46	.42	.34	.31
		A	.48	.44	.36	.33

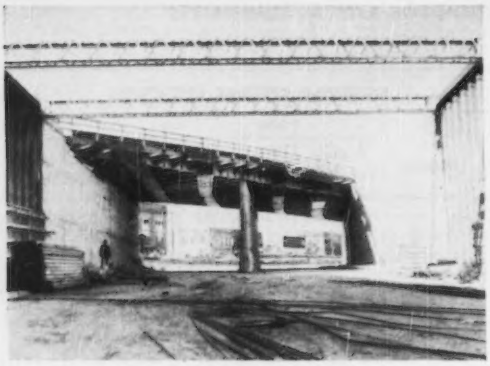
GENERAL DIFFUSE LIGHTING

LUMINAIRE	Spacing not to exceed	Ceiling	75%		50%	
		Walls	50%	30%	50%	30%
		Room Index	COEFFICIENT OF UTILIZATION			
MF G .75 M .70 P .65 — 1.2 x MH — 39 — 45 Totally Enclosed		J	.24	.19	.22	.18
		I	.29	.25	.27	.23
		H	.33	.28	.30	.26
		G	.37	.32	.33	.29
		F	.40	.36	.36	.32
		E	.45	.40	.40	.36
		D	.48	.43	.43	.39
		C	.51	.46	.45	.41
		B	.55	.50	.49	.45
		A	.57	.53	.51	.47
MF G .70 M .60 P .50 — 1.2 x MH — 47 — 36  Suspension Type Two 40-Watt Lamps		J	.26	.21	.22	.19
		I	.31	.26	.27	.24
		H	.34	.30	.30	.27
		G	.38	.34	.34	.30
		F	.41	.37	.36	.33
		E	.45	.41	.40	.36
		D	.49	.45	.42	.41
		C	.51	.48	.44	.44
		B	.55	.51	.47	.45
		A	.57	.53	.49	.46
MF G .70 M .65 P .60 — 1.2 x MH — 45 — 3 Suspension Type with Louvers Four 40-Watt Lamps		J	.26	.23	.23	.21
		I	.31	.28	.28	.26
		H	.35	.32	.31	.28
		G	.38	.35	.34	.31
		F	.41	.38	.36	.34
		E	.44	.42	.39	.37
		D	.48	.45	.42	.39
		C	.50	.49	.43	.41
		B	.53	.50	.46	.43
		A	.54	.52	.47	.45

INDIRECT LIGHTING

MF G .60 M .50 P .40 — 1.2 x CH — 80 — 0 Two 40-Watt Lamps			.15	.11	.09	.08
			.19	.15	.12	.10
		H	.22	.19	.14	.12
		G	.26	.22	.17	.14
		F	.28	.24	.19	.16
		E	.32	.28	.21	.18
		D	.35	.31	.23	.21
		C	.38	.34	.25	.22
		B	.42	.39	.27	.25
		A	.43	.41	.29	.27
MF G .65 M .55 P .45 — 1.2 x CH — 85 — 0 Silvered Bowl		J	.17	.14	.13	.11
		I	.21	.17	.16	.14
		H	.24	.21	.18	.15
		G	.27	.24	.21	.18
		F	.30	.27	.23	.20
		E	.33	.30	.25	.22
		D	.37	.33	.27	.25
		C	.39	.36	.29	.26
		B	.43	.40	.31	.30
		A	.45	.42	.34	.31

MF = Maintenance Factor
G = Good
M = Medium
P = Poor
MH = Mounting Height
CH = Ceiling Height
Source: IES Lighting Handbook



TRAINWAY-BRIDGE ABUTMENTS combine sheetpile and H-pile support. This bridge, at west end, is only one at skew. Concrete wall-sheathe was placed at once at abutments and at . . .

NICHES IN EVERY BLOCK, which make room for facilities. This is niche at sump-pump house. Concreting in other areas was held up a year while piles gained full lateral loading.

El Paso Rail Cut Cuts Traffic Problem

D. T. Cremans
Field Engineer, De Leuw, Cather & Co., Chicago, Ill.

- **Latticed struts brace concrete-covered sheetpile walls**
- **Wall-form ties and reinforcement hangers welded to piles**
- **Cathodic anti-corrosion system protects underground steel**

EL PASO, TEXAS, like many other cities in the United States literally grew up around its railroads. Through the years both city and railroad traffic problems increased. By 1946 four main lines sliced through the heart of the city (in two locations half a block apart), at grade with eight main north-south streets. Traffic snarls and tie-ups resulted from the passing of every train. In fact traffic surveys conducted by the El Paso Police Department in 1946, during the twelve-hour period from 7 am to 7 pm, showed that traffic was tied up about 10% of the time.

In 1946, city officials and representatives of the railroads engaged DeLeuw, Cather and Co. to survey the traffic problem, agreeing to act on the firm's recommendations as to a solution.

A $5,000,000 project—depressing the tracks in one existing right-of-way and carrying vehicles across on eight bridges at street level—was initiated by the survey.

The Texas Highway Department agreed to participate in the cost of construction (grade crossings were to be eliminated on two highways) to the extent of $1,500,000.00. The remaining $4,000,000 was assumed equally by the city and the railroads.

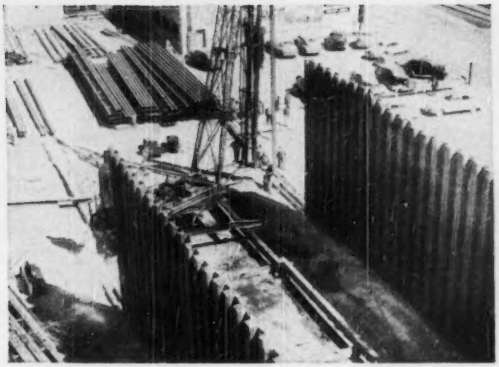
Beginning in 1948 contracts were let for various sections of work as plans were completed. The principal contract, for most of the depressed trainway work was let in July 1948. Estimated at $1,500,000, the job went to Robert E. McKee, El Paso, at $1,365,164. In addition to seven-odd blocks of depressed three-track trainway, this contract included six street bridges, the substructure of two more bridges, and a drainage sump and pumping system. Other contracts include temporary tracks for routing trains to the second railroad right of way (to be abandoned), two more bridges, street work, and a variety of signal and track work.

The three-track depressed trainway is 2,600 feet long, 24 ft deep, 45 ft wide between concrete-faced Z-type steel sheetpile walls with a wale-and-strut system of bracing. The predominant length of piling is 42 ft, with other lengths up to 55 ft.

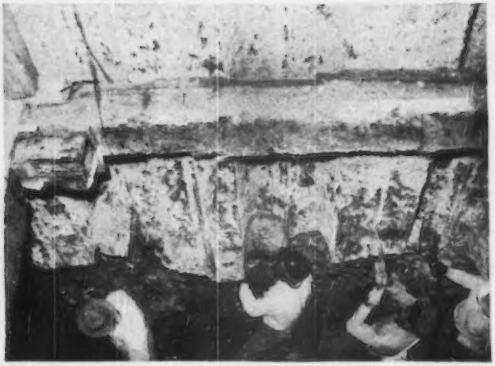
The entire right of way was scarcely more than 50 ft wide; in order to obtain the 45-ft clear width, sheetpiling had to be driven within inches of existing buildings (which were underpinned). Leston Watson, Dallas piling subcontractor, employed two rigs for the job.

In order to assure proper alignment and the close tolerances specified ($\frac{1}{4}$ in. per ft vertically with a maximum displacement of 2 in toward the tracks) it was necessary to set up a minimum of 100 ft of piling ahead of the driving rig. For this purpose a stiff-leg rig with 90-ft boom was used. This rig made the initial drive for 10-ft penetration, with every fifteenth pile driven 10 ft deeper, to act as a key. The main driving rig was a standard crane with hanging leads. Both rigs employed double-acting steam hammers. Of 2,682 sheetpiles driven, only a scant dozen exceeded tolerances; v-notches were cut in the webs of these piles, the dirt excavated from behind them, the piles jacked back into tolerance, and steel plates welded over the notches to compensate for the lost strength.

• Boulder stratum slows work — The only major obstacle encountered in piledriving was a stratum of loose boulders averaging 6 ft thick, and running for about 450 feet, 20 to 26 feet below ground line. This obstacle was surmounted by driving piles to refusal and excavating the first 12 ft of trainway, after which a secondary line of timber sheathing was driven 9 ft inside the pile walls and the earth excavated between the sheathing



PILEDRIVING was handled by two rigs, the first one (shown) lining up Z-type sheetpiles in 100-ft sections, and driving the piles 10 ft down. Second rig completed the job.



BOULDER STRATUM in part of location stopped piles, made it necessary to hand-mine under sheetpile points, free them for driving on down to full penetration.

and piling by clamshell. As excavation progressed the piling was held in place by timber shoring between piling and sheathing. When the boulder stratum was reached, it was excavated by pick and shovel, after which the area was backfilled and compacted to the 12-ft level. Sheetpiles then were driven to the required penetration—17 ft below the top-of-rail—and the timber sheathing extracted.

As piledriving proceeded the trainway was excavated to a depth of 12 ft, and wales and struts were erected. Wales were 24 WF beams 24 ft long, installed with webs horizontal, resting on top of piling. Wales were fastened to the piling with clip angles. Clip angles were welded to the individual sheetpiles and the wales were bolted to the clips. Holes were shop-drilled in the clip angles but all holes in the wales were field-drilled.

To facilitate field drilling and bolting, the contractor's superintendent, C. E. Jones, rigged up a pneumatic-driven vertical gang drill mounted on a carriage. For spotting the hole locations in the wale web, a job built two-way-level finder was devised so that when a pin was placed in the clip angle hole and the instrument plumbed and leveled, a center-punch was aligned with the hole. The gang drill simply rolled along the wale flanges, was spotted over the center-punch mark and drilled through to the clip angle.

Welded latticed steel struts that span the trainway from wall to wall then were erected and bolted to the wales. Struts are located between bridges at 24-ft spacing. Stiffener plates were welded between wale flanges and piling at each strut location.

• **One-year wait for concrete**—After erection and fastening of wales and struts was complete, excavation was carried to subgrade, which averages 24 ft below existing ground level. Vertical clearance from the bottom of struts and bridge stringers to top of rail is 22 ft. A waiting period of one year was provided before placement of concrete wall lining on the sheetpiles was started, to allow for earth settlement and consequent movements of piling. During the year, strain and deflection observations were made to determine when the wall was stabilized.

Lining of the sheetpile walls was started March 1 of this year and now

CATHODIC PROTECTION BEATS ELECTROLYSIS—KEEPS CURRENT COMING INTO WALL SHEETPILES

Trainway-wall sheetpiles extend 17 ft. below subgrade, 14 ft. below wall concrete. Because the wall acts as a vertical beam deriving most of its strength from the piles, it is important to keep full strength in sheetpiles.

Sheetpile strength is maintained only by preventing corrosion.

Cathodic protection prevents one significant corrosive condition — electrolysis. Without protection, where earth conditions induce steel-to-soil currents, steel particles would go into solution, move into the soil, resulting in loss of structural strength.

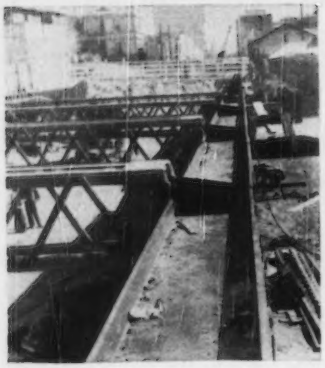
The cathodic protection system applies direct current to reverse corrosive stray currents, keep the steel where it belongs.

Tests for electrolytic conditions—After completion of trainway piledriving and excavation, piling-to-soil potential readings were taken along both walls of the trainway, both outside and inside the cut. These readings indicated the need for cathodic protection. Because of restricted space, a galvanic magnesium-anode system yielding sufficient current density could not be used. Therefore a rectifier system was indicated.

Tests also showed that all current in the walls traveled from west to east. The cathodic system is being installed in the eastern three-eighths of the trainway (where soil resistivity is lowest) to draw the current in the walls from the west end to this artificial potential area.

The system as set up consists of ground beds buried at depths ranging from 10 to 40 ft. Each of eight ground beds consists of 6 to 40 4x80-in. graphite anodes set vertically in coal coke breeze backfill with 12 in. of the backfill below the anode and 24 in. above the anode, in 12-in. dia. drilled holes. The anodes are connected to a collector wire, which runs in a cable slot along the outside of the wall concrete. This collector wire in turn is connected through a rectifier (one per bed) to the sheet-piling. Maximum AC power to rectifier is estimated at 6252 watts. Anode life is estimated to be 24 years.

Anodes in beds along the outside of the walls are on 10-ft centers, 5 ft from the walls. By moving these beds farther away from the pile walls the spacing between anodes could have been increased, but due to the high value of the property adjacent to the walls it was deemed advisable to hold the installations within the 5-ft limit. Anodes in beds inside the cut are spaced at 20 ft centers, about 15 ft from a wall. Contract for cathodic protection was awarded in May, to Rio Engineering Co., Houston, on a bid of $22,325.



WALE FOR WALL is 24-in. beam with web flat. Finish concrete will cover the wale. Note stiffeners at struts.

STRUT CONNECTION to wall wale is welded and bolted clip angle. Similar connection ties sheetpiles to wale web.

J-HOOKS, for hanging wall-sheathe reinforcing steel, were welded to piles with special gun. Form ties were set similarly.

is complete. The lining varies from 3½ in. to 18 in. due to the shape of the Z piling, but the average coverage on the inside piling face is 6 inches. V-type contraction joints are provided vertically and horizontally at about 8-ft centers and expansion joints are placed at between-block recesses, or niches, that also act as workman-refuges and sites for mechanical equipment. Three-inch weep holes are provided at the top of a gutter drain throughout the length of the walls. Weep holes are about 8 ft center to center. A 6 in. wide concrete wall railing surmounts both walls as a safety measure.

Wall reinforcing steel is held in place on the sheetpiling by spot-welded J-hooks. The J-hooks are furnished with individual weld material in the end of each hook and are welded to the piling by using a special gun-type welding device. Hooks are placed on 24-in. centers vertically and about 18-in. horizontally. Wall reinforcing is on 12-in. centers so every other bar is firmly anchored by hooks. Over 30,000 of these J-hooks were used on the walls. At each contraction joint every fourth bar is broken to afford a weakened plane and to aid in controlling vertical cracks.

Forms were held in position by welding low carbon steel snap ties directly to the piling on approximately 18 in. centers both ways. Alternate rows of snap ties were set accurately by transit and the intermediate tie rows were aligned by using a straightedge templet. Forming and pouring was maintained in 8-ft lifts. The lifts were stair-stepped over a distance of three blocks: While the third lift was poured in one block the second lift was poured in the next block and the first lift in the next block. Concrete lining is carried to three feet below ground level. Sheet-pile steel below concrete is protected by a cathodic system, discussed separately with this article. Where the trainway widens beyond 55 ft, retaining walls are counterforted reinforced concrete.

• **Identical bridges at six streets**—Six of the eight streets that cross the trainways are carried on identical single-span bridges. These bridges provide a 50-ft pavement with 10-ft sidewalks on each side. Decks are 6 in. concrete slabs supported on 24-in. and 30-in. WF stringers. The abutments of these bridges are formed by the sheet pile walls, supplemented by eleven 10-in. H-section bearing piles in sheetpile recesses.

Wall wales are bolted to the outside stringers at each bridge; a separate wale runs through the abutments. The concrete wall lining carries right on under the bridges, and at each abutment 80 ft of the lining was poured at the time the bridges were constructed, as it was not deemed necessary to apply the year waiting period to these H-pile reinforced sections.

An interesting feature of the erection of these bridges was the fact that stringers and blast plates were erected and fastened before the trainway was excavated, enabling the steel gang to work on the ground. This procedure cut erection time considerably.

The bridges at each end of the trainway are two-span structures (see photo). Only the substructures were erected under the major contract. The substructure of the bridge at the west end is supported on spread footings; the east-bridge substructure is borne by H-piles 60 ft long, because of low-bearing-capacity soil.

• **Trainway drains to sump**—Drainage of the trainway is amply provided for. A 1200-ft vertical curve in the middle of the cut ties into a one percent grade to the west and 0.3 percent grade to the east. At the low point of the curve a 16,000-cf capacity concrete sump was built below sub-grade. Water is fed into this sump through concrete gutter drains. These gutter drains are constructed so that they also act as reinforced concrete grade beams along the subgrade line. Adjacent to the sump a concrete pumphouse was constructed in a special sheetpile-lined recess.

The pumphouse contains four 1500-gpm electrically-driven centrifugal pumps and one 3000-gpm gasoline-engine-powered standby pump with an automatic starting system. All pumps are controlled by a float-actuated programming device that cuts in the individual pumps as the water in the well room reaches predetermined heights. Water is discharged through into a storm sewer system that was built previously by the city to clear the depressed right-of-way and to afford the outlet for depression drainage water. In addition to the main sump and pumphouse a smaller interceptor sump will be built under another contract at each end of the trainway.

Trackwork in the depression is well under way, the first freight train already having passed through. Passenger trains will follow in October. The present time-table calls for the entire project to be completed in December.

Harlan H. Hugg is Project Manager for De Leuw, Cather and Co. in El Paso. Railroads whose trains will use the trainway are the Southern Pacific, Texas and New Orleans, El Paso and Southwestern, Texas and Pacific, and the El Paso Union Depot Co., which is owned jointly by the participating railroads.

At Florida Lime Pit

80 yds. hourly on 100′ push

Troup Bros., Inc. of Miami, Florida, have found a high-speed, rubber-tired C Tournadozer to be the most effective rig for stockpiling lime rock at their extensive oceanside pit. They are digging rooted coral from ground level to a depth of 8 or 10 ft. where the water line is reached . . . then rolling the loose, high-void material downhill to an extensive stockpile. It's tough going most of the time! Stone must be moved up steep grades to top of dump. Seepage pools cover portions of the work area. Short haul distances and high crusher capacity require fast continuous shuttle operation.

Under these conditions, Troup Bros.' Tournadozer completes a typical 200-ft. round trip every 2 to 2½ minutes . . . makes up to 24 trips an hour. Instantaneous non-stop speed selection — plus high operating speeds in both forward *and reverse* — enable "C" to consistently deliver 60 to 80 pay yards of pit rock hourly.

Production like this, month after month since 1948 when the Tournadozer was brought in, is the reason Company President W. J. Troup describes his mobile rig as a "heavy-duty machine". He adds, "I like the Tournadozer because of its speed and power to move material."

Ideal for clearing, hauling tasks

Tournadozer's versatility and 19 m.p.h. travel speed pay off on extra assignments for Troup Bros., too. They use their electric-control rig for clearing trees and stumps, and as a prime mover for a disc plow and brush chopper.

This same ability to handle extra jobs per year — and get extra production per hour on all of them — can increase *your* profits, too. Your local LeTourneau Distributor can show you how . . . see him for complete facts on rubber-tired Tournadozers TODAY.

"Tournadozer-Trademark Reg. U. S. Pat. Off. PQ17-b"

Tournadozer's 4-wheel drive on giant 21.00 x 25 low-pressure tires, and 180 h.p. diesel, put plenty of power and traction behind rugged 2½-yd. blade.

Send for complete facts

To: R. G. LeTOURNEAU, Inc., Peoria, Illinois.

Please send information on C Tournadozer. ☐ Specifications ☐ Price ☐ Delivery ☐ Would like job analysis on present work.

Name_____ Title_____

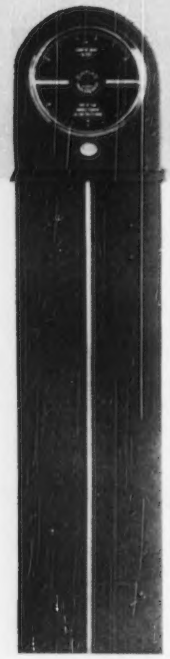
Company_____ Type of work_____

Street_____ City, State_____

☐ Would also like information on new 122 h.p. Super D Tournadozer

LET

These newly designed FILTER GAUGES



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READER COMMENT

Counterattack

Sir: The shade of Walt Whitman must surely have smiled as you wrote your entirely delightful account of the joint A.S.C.E-E.I.C. meeting in Toronto (ENR July 20, 1950, p. 29) and particularly as you penned your enticing reference to our American friends and guests "pushing farther into the interior" of this wild and uncivilized country!

I think that your great poet would have forgiven this slight amendment of one of his best known poems:

"Come my sad-faced engineers
Follow Bowman into the Dominion's dark interior;
Have you your pistols? Have you your sharpened axes?
Pioneers! Oh! Pioneers!
Tread softly in Toronto's subway;
Beware the traffic and . . ."

But I have just recalled how many verses are in the original poem and so should stop. Yours, from the backwoods,

ROBERT F. LEGGET
Ottawa, Canada

West African Railroad

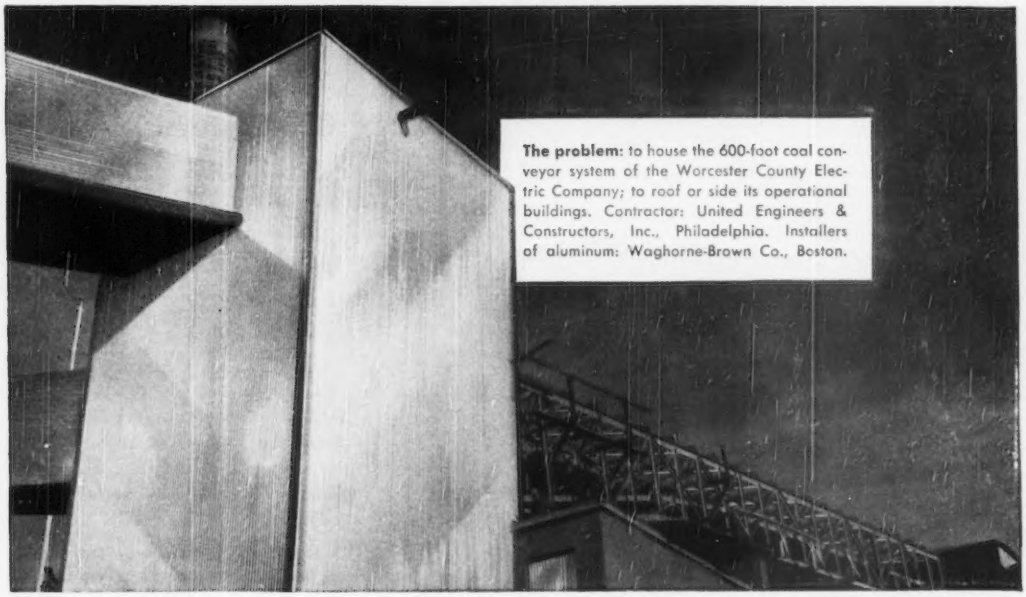
Sir: In your interesting article on developments in French West Africa, entitled "Western African Railroad", (ENR Apr. 27, p 55), it was reported that steel crossties are being used in the extension of the Abidjan-Niger Railroad from Bobo-Dioulasso to Ougadougou in Upper Volta. In "Travaux", Feb. 1950, pp 86-89, C. Lerebour, principal engineer of public works of the colonies, reports that prestressed concrete crossties, locally fabricated, are being used in this extension. Although it was originally planned to use steel ties, French engineers were quick to recognize the advantages of prestressed concrete ties and to change over to them, (this presumably accounting for the difference between the two reports).

In view of the growing interest manifested in prestressed concrete in the U. S., the writer whose recent study of prestressed concrete included a reading of Mr. Lerebour's report submits some points of interest from this report:

Early in 1949 the new casting plant at Dafinso near Bobo-Dioulasso, built to fabricate prestressed concrete products, notably crossties, was placed in operation. Monthly production should average about 12,000 ties, equivalent to 5 miles of single track. At this rate it will take almost three years to pro-

(Continued on page 53)

Decision in Worcester, Mass.



The problem: to house the 600-foot coal conveyor system of the Worcester County Electric Company; to roof or side its operational buildings. Contractor: United Engineers & Constructors, Inc., Philadelphia. Installers of aluminum: Waghorne-Brown Co., Boston.

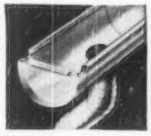
Reynolds *Lifetime* Aluminum Industrial Corrugated

In this $9 million turbo-generator expansion program, the problem of over 30,000 square feet of roofing and siding was a big one. The decision was for Reynolds *Lifetime* Aluminum Industrial Corrugated because: it is rustproof, resists corrosion from industrial fumes, lasts indefinitely without protective painting; its light weight, combined with great strength, helps solve construction problems; and its radiant heat reflectivity keeps interiors cooler in summer, warmer in winter.

This Industrial Corrugated is .032" thick, with corrugations ⅞" deep for extra rigidity (2⅔" crown to crown). Roofing sheets are 35" wide, siding sheets 33¾" wide—both providing 32" coverage. Lengths from 5' to 12' in increments of one foot.

On this Worcester County Electric Company job, which is a part of New England Electric System's electric expansion program, sheets were bolted to steel framework. Reynolds can also supply *Nelson "Rivweld" Studs* (see details below); or strap and wire stock for use over any type purlin. For technical assistance, call any Reynolds office, in 32 principal cities, or write **Reynolds Metals Company,** Building Products Section, Louisville 1, Kentucky.

Now available! REYNOLDS *Lifetime* ALUMINUM INDUSTRIAL GUTTERS. 6" Half-Round Gutters, stipple-embossed, with 4" downspouts to drain 2,000 sq. ft. of roof area per pipe. Slip-joint installation, no soldering. Half the price of other rustproof materials!



NELSON "RIVWELD" STUDS cut application costs!

Contractors report up to 50% savings on application with this direct fastening from above. No scaffolding, no inside work. Cross-section shows cadmium plated flux-filled base, aluminum insert, aluminum washer placed before riveting. Reynolds can supply these studs!

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Reynolds Metals Company, Building Products Section
2009 South 9th Street, Louisville 1, Ky.

Please send full information including cost comparison on Reynolds *Lifetime* Aluminum Industrial Corrugated; ☐ Industrial Gutters; ☐ Nelson "Rivweld" Stud.

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NATIONAL READY MIXED CONCRETE ASSOCIATION
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N.R.M.C.A. REGISTRY No. D

This little plate, on the truck mixer that supplies your job, guarantees its capacity to thoroughly *mix* and *agitate* as well as to deliver a full rated load.

This means that it has the proper drum design, accurate water control and speed of revolution, and the full specified amount of *free mixing space* proved necessary to produce quality concrete.

It is one simple, sure protection which the $250,000,000 ready-mixed concrete industry offers architects, engineers and other users against questionable concrete delivered by non-standard truck mixers.

Insist upon this rating plate on the truck mixers that supply *your* job.

* *The Bureau rating plate is available to any manufacturer who meets its quality standards and requirements.*

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Dunellen, N. J.
THE T. L. SMITH COMPANY
Milwaukee, Wis.

Truck Mixer Manufacturers Bureau

(Continued from page 50)
duce some 384,000 ties required in the 160 mile, meter-gage extension to Ougadougu. The region traversed is subject to brush fires during dry seasons, and is infested with termites, precluding the use of wooden ties. Steel ties were likewise ruled out due to their high cost, rapid corrosion in a hot, humid climate and uncertain contact with the underlying ballast.

The prestressed concrete ties are about 8 in. wide, 5 ft 10 in. long, about 4 in. deep at center and ends, and top is "banked" under rails, where depth is about 4½ to 5 in. The concrete mix is based on a quartz gravel aggregate and 1.8 bbl per cu yd of cement, the concrete attaining a compressive strength of 5,700 psi, in 7 days.

The reinforcing consists of 20 high tension steel wires about ⅛-in. in diameter, combined and twisted in twos and threes to form 8 strands symmetrically located in the cross-section. The wires are prestressed to 185,000 lb per sq in. by a long-line process similar to Hoyer's, with full bonding between wires and concrete. After a lapse of at least three days, when the concrete has hardened sufficiently, the prestress is released inducing precompression in the concrete. Each tie contains 44 lb of cement and only 5½ lb of steel. The weight per tie is 194 lb, which is twice that of the equivalent steel tie which offsets some of its other advantages.

Upon completion of the concrete tie production in about three years, the casting plant will continue operations by fabricating precast, prestressed bridge and building members, as well as replacing of ties on the Abidjan-Niger Railroad.

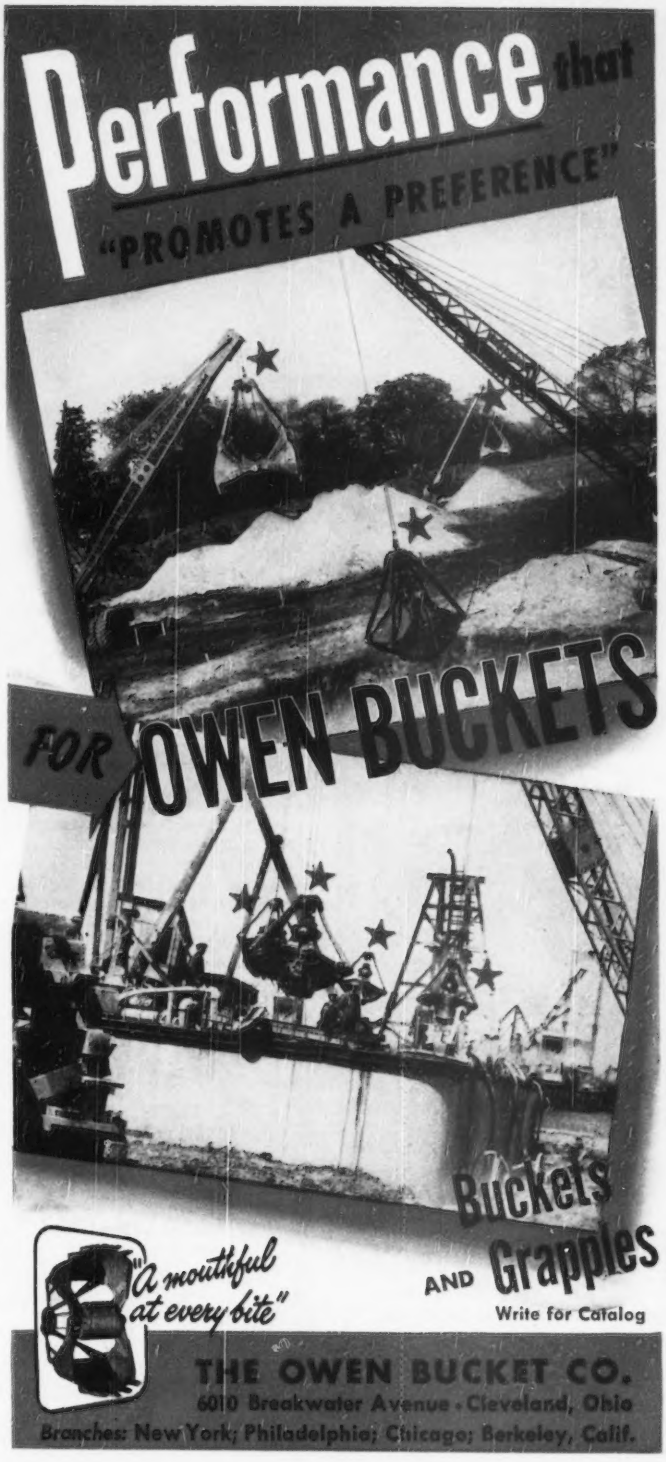
A. C. ROEMERMANN
Civil Engineer
New York, N. Y.

Supercollossal?

Sirs: Now just hold your shirt—or nose—according to your leaning on the matter! (ENR June 22, p. 21.) In the first place, no one who even thinks as an easterner (I was one) has any right or qualifications to evaluate *anything* whatever that has to do with western water. You simply can't grasp the meaning of western water by superficial examinations.

In the second place, if it is possible to get some high-elevation water from the Columbia Basin to the Colorado Basin it wouldn't involve 1,000 mile diversion works, would it? And who can say whether or not it's feasible without a study? So hold your clothes pins awhile.

M. R. DAUGHERTY
Los Angeles, Calif.



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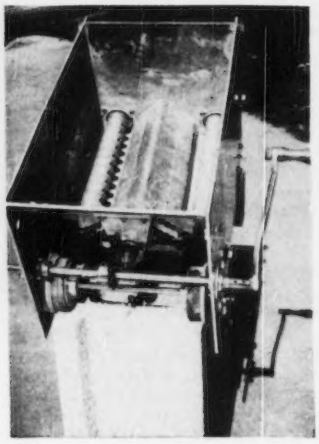


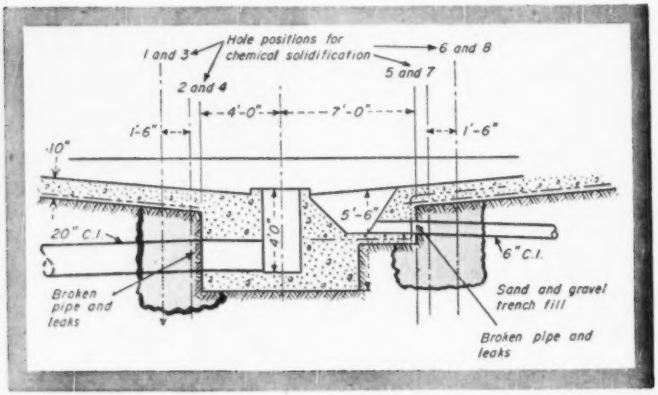
MECHANICAL MORTAR SPREADER for use with concrete block is said to effect a 50% mortar saving by eliminating waste. Besides that, operation is continuous and rapid. Jack J. Wegner (pictured above) developed it at the Washington State Institute of Technology, Pullman, Wash. The device advances along the top of a wall distributing the proper quantity of mortar as it goes. Augers geared to rubber-tired wheels operated by the hand crank control mortar flow. Hopper body (16x7½x9½ in.) holds sufficient mortar for several feet of wall. An improved model is being built at the Institute.

Cheap Pipe-Break Repair

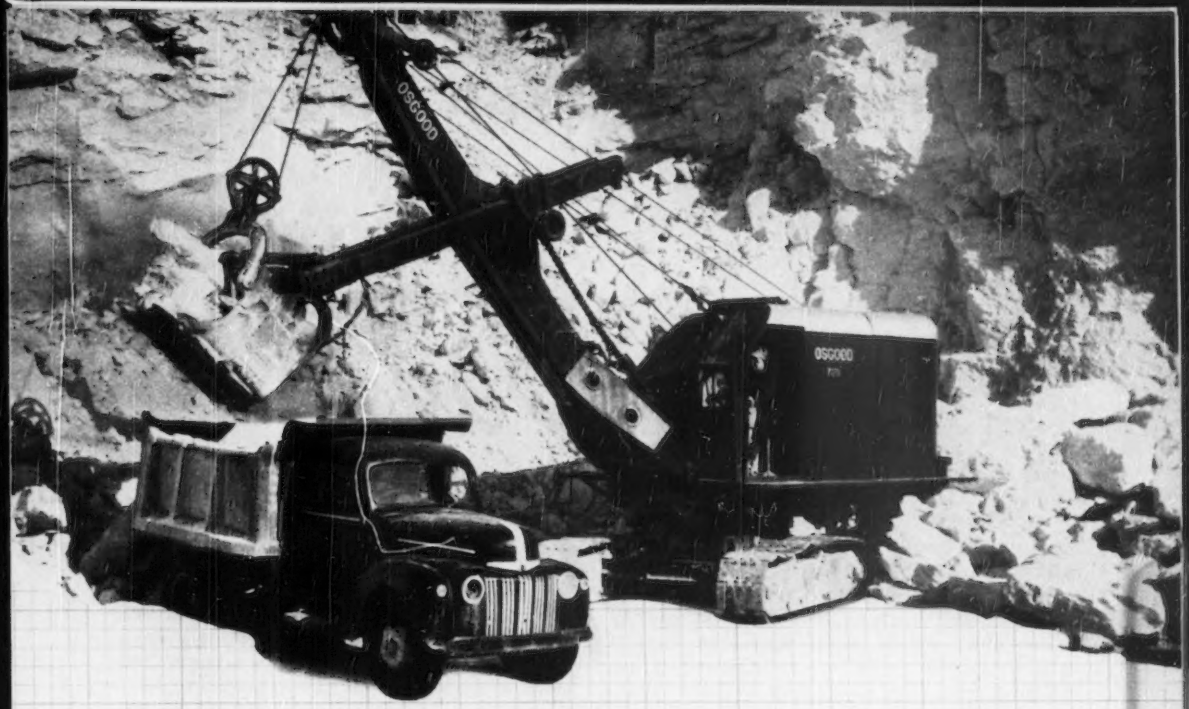
When a concrete settling tank at a sewage-treatment plant was emptied recently, groundwater hydrostatic pressure raised the tank enough to break inflow and sludge draw-off lines where they joined tank-bottom concrete.

Earth underlying the tanks is clay. Pipe trenches had been backfilled with sand, which contained normal voids.

Seeking a pipe repair that would not fail when the tank was refilled, engineers decided to surround the breaks with impervious material. This they did by injecting water glass and a calcium chloride solution into the spaces that are shaded on the drawing. When the two injections met in the sand voids a gel was formed. This gel hardened, to produce the seal and repair the break.



FOUR HOLES in concrete above each pipe break afforded access for injection of chemicals that solidified soil in shaded areas.



loading pay dirt...

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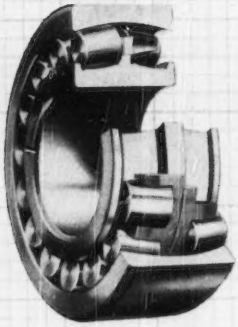

To move the earth and make it pay, Osgood power shovels must stay on the job day after day, with minimum time off for maintenance.

One way Osgood engineers make sure of efficient shovel performance and reliability under hard knocks is by using Torrington Spherical Roller Bearings on drum shafts and reversing shafts. In these tough applications, self-aligning bearings roll smoothly, assure uniform load distribution, even when momentary overloads cause shaft deflection.

You can give your equipment an extra margin of work capacity, and greater service life expectancy by specifying Torrington Spherical Roller Bearings. Our engineers will be glad to help you with details of design and application.

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Member of RED Team

BUCYRUS-ERIE B-TYPE SCRAPERS are perfectly matched to the champion of crawler tractors — the new International TD-24. These scrapers do an outstanding job of applying the superior power and speed of this tractor to dirt moving. Operating behind TD-24's, these scrapers produce greater yardage at less cost than any other tractor-scraper combination, including other scrapers working with TD-24's.

THE B-170 (15-yard struck capacity) operates without a pusher in normal loading. It has greater struck capacity than any other scraper available for self loading. Like other Bucyrus-Erie scrapers, it loads fast and easy, dumps quick and clean without requiring extra power. It discharges the load at traveling speed, with no stop for shifting gears. Front bowl lift provides extra stability for backsloping or finishing on steep grades.

THE B-250 (22 yard struck capacity) is for loading with pusher assistance. It's the largest scraper in current production available for use with any crawler tractor. It has the same excellent operating characteristics as the B-170. Its big capacity opens up great possibilities for high production on relatively long haul work. Both scrapers are built like battleships and have ample tires for flotation and low rolling resistance.

The BIG RED team — TD-24 tractor and B-170 or B-250 — is a natural for the smart, progressive contractor who is willing to overhaul his methods to get lower cost dirt. Get the complete details!

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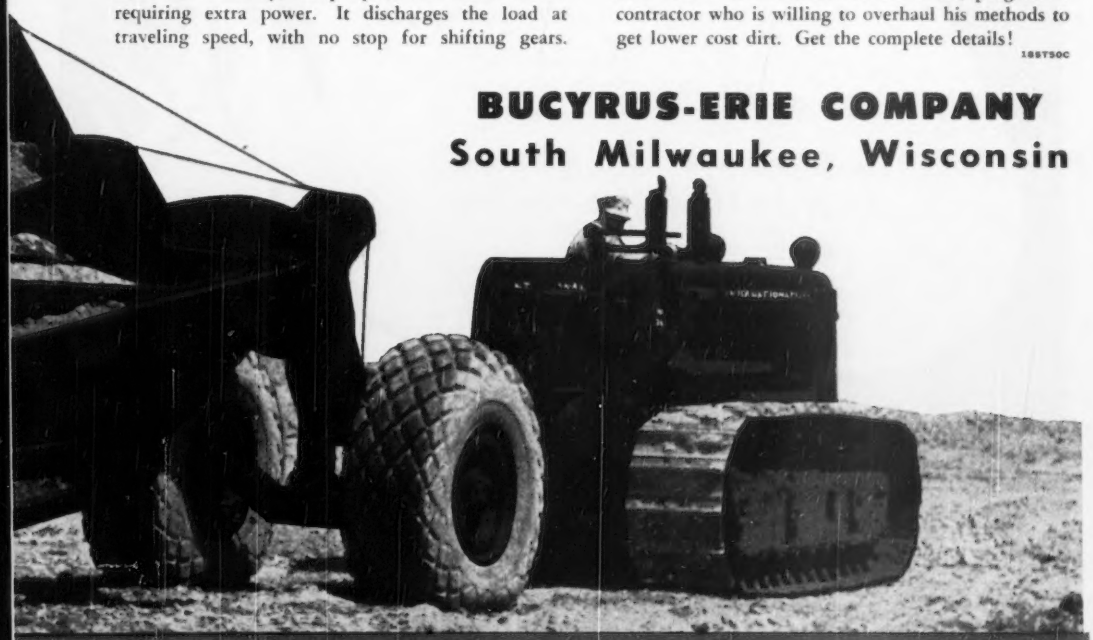
BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin



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Lightweight
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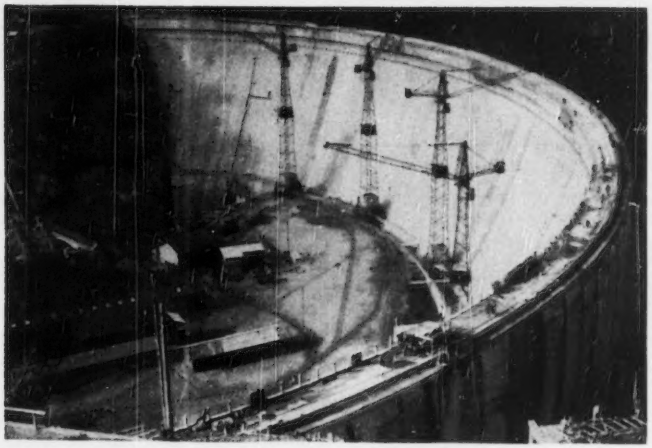
DEVELOPMENTS ABROAD



PIEVE DI CADORE DAM on the Piave River in the Italian Alps is the largest of four dams being built for power purposes. It is an arch-gravity type structure 55 meters high in the river gorge, which is at the far end.—(McGraw-Hill World News photo.)

Italy starts construction on new hydro system

Construction of an arch dam 662 ft high has been started in Italy on a tributary of the Piave River in the Italian Alps. In a second stage of this development, it is proposed to carry the dam to a height of 254 meters, or 833 ft. (Hoover Dam, the world's highest, is 726 ft.)

This structure, known as Vajont Dam, is one of four now being built as part of the second stage of a program for complete development of the power resources of the Piave River and its tributaries. The third stage, still only planned, will add more reservoirs, tunnels and power plants, all on the tributaries.

The main reservoir of the present scheme will be formed by a dam on the main river called Pieve di Cadore, 55 meters high, now nearly completed. It is an arch-gravity structure of concrete that will store 64 million cubic meters (about 52,000 acre-ft).

Flow from the Boite River (a tributary coming in below this dam) will be stored in a reservoir of 10.5 million cu m formed by an arch dam (Valle Dam) 73 m high near the mouth of the river. It will be carried under pressure through a tunnel 5 km long to a powerhouse on the shore of the reservoir behind Pieve Dam. From that reservoir the combined flows of the Piave and Boite Rivers will be carried in a tunnel 19 km long parallel to the main river to the reservoir behind Vajont Dam, which is on the Vajont River near its mouth.

From the reservoir behind Vajont Dam another tunnel, still parallel to the main river will carry the combined flow of the three streams to a small reservoir (6 million cu m) on a small tributary formed by an arch dam 85 m high, called Val Gallina.

Two pressure tunnels about 2 km long will deliver water from that reservoir to the Soverzene power station, which is nearing completion in a great rock chamber in the hills on the east side of the Piave, about 26 miles below Pieve di Cadore Dam. A large tail-race tunnel will return the flow to the river.

The combined output of the power plants will be 820 million kwh, and the total cost of the work around $50 million.

This work is being done by the Societa Adriatica di Elettricita under the direction of Signor Semenza, chief engineer.

The gorge in which Vajont Dam is being built is very narrow with almost vertical rock sides. With the dam built to a height of 202 m (662 ft), as now planned, the reservoir will have a capacity of 58 million cu m, about 47,000 acre-ft.

Road congress to meet in Portugal in 1951

The British organizing committee of the Permanent International Association of Road Congresses has announced that the Portugese government has invited the association to hold its next Congress in Lisbon in 1951. A date in early September of that year has been suggested but has not been confirmed.

Subjects set up for discussion are: Progress made in the use of cement, bitumens and other materials in road construction since the congress met at The Hague in 1938; progress made in the stabilization of soils for use in road foundations and surfacing; basic factors in road design and the influence of traffic on design; maintenance as affected by the installation of utilities, and the construction and maintenance of roads in thinly populated areas and undeveloped countries.

There has been no organizing committee in the United States since the United States Government gave up its membership in the association, and the prospect that the government will resume its membership is remote, according to Thomas H. MacDonald, Commissioner of Public Roads. If sufficient general interest in the next congress develops in this country, Mr. MacDonald states, an unofficial organizing committee could be set up with the sanction of the executive bureau of the association.

Meanwhile, those interested in obtaining more particulars can obtain them from the Rt. Hon. Alfred Barnes, Minister of Transport, Berkeley Square House, Berkeley Square, London, W.1, England.

Foreign Briefs

Prefabs for Ceylon—Firms all over the world have made bids for the construction of 20,000 middle class prefabricated houses in Ceylon, according to R. H. Basset, secretary of the Ceylon Industrial Ministry, Colombo. Some firms are considering the establishment of factories in the island for mass production of prefab material.

New R.R. terminal in Mexico—Clearing of old structures has started in Mexico City for the start of construction on a new 14-story passenger terminal and new freight handling facilities. The passenger station will be on the same central site as the present one while the freight terminal will be built outside the city in Valle de Mexico, convenient to the new industrial district of Tlalnepantla. Both stations are badly needed as the Mexican capital has now a population of 3,000,000, including suburbs.

Brazil—A budget of about $6,000,000 has been approved for the construction of one of the two bridges to be built across the Sao Francisco River as part of a valley development plan. Immediate expenditure of about $50,000 for preliminary work including designs (to be done by a French firm) was approved. The 4,500 ft bridge will connect Propria and Colegio.

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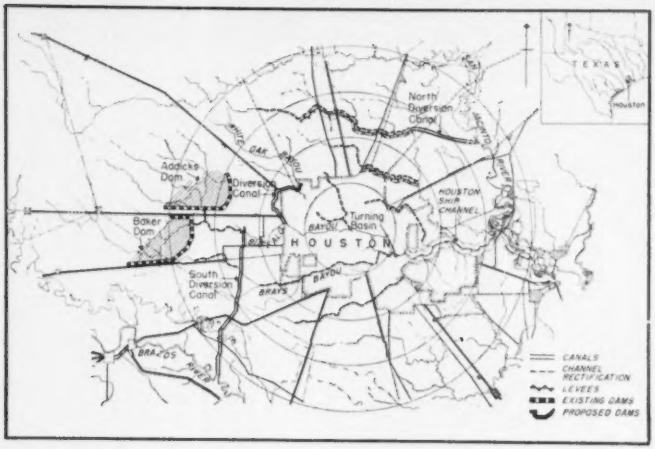

Confer on flood curbs for Houston area

A partial—but quickly-activated—flood control plan for several of the bayous flowing through Houston, Texas, may be the outcome of a series of conferences among city, county and Army engineers.

The meetings were held at the call of Lt. Col. E. I. Davis, Galveston district engineer, to review a 1940 flood control program for the drainage basin in the light of Houston's great growth in the last decade.

At the meetings, the Harris County Flood Control District presented a revised program that would bring the original $50,000,000 plan (now known locally as the Norman plan—for H. R. Norman, consulting engineer) up to $75,000,000.

Approved by local interests, the revision calls for a four-stage development, including the already-completed Addicks and Barker dams to retain flood waters on the upper reaches of Buffalo Bayou, and improvements to the Bayou channel below the dams. Second stage would be construction of a 16½-mi concrete-lined South diversion canal from the Bayou to the Brazos River, and rectification of Bray's Bayou through the metropolitan district.

Third stage would include a diversion canal from White Oak Bayou to Buffalo Bayou; and the fourth would be construction of a North diversion canal from Greens Bayou to the San Jacinto River, and channel improvements on various tributary streams.

Mr. Norman, with cooperation of Knappen, Tippetts Abbett Engineering Co. of New York, is acting as consultant to the Harris County district.

LOUISIANA'S SECOND CITY—This view shows the principal downtown business district of Shreveport. The Municipal Airport appears at the upper right.—(Langston-McEachern photo.)

Many construction projects planned for Shreveport

Among the big construction projects under way and nearing completion at Shreveport, La., are the 450-bed VA hospital, built at a cost of $10,000,000; the 10-story, $6,000,000 Confederate Memorial Hospital; the large stadium on the Louisiana State Fair grounds; and the Allen-Dalzell-Linwood overpass, a major project in the street improvement program of the city. In the last year four large high schools were dedicated.

Adjacent to Shreveport is the very large, $20,000,000 Barksdale Air Force base. Shreveport also has a municipal airport, and a new and larger one is under construction.

At Barksdale there is a large housing expansion program under way. Military authorities are planning for 692 dwelling units at a cost of about $5,500,000.

Shreveport, next to New Orleans, is the largest city in the state. Its recent rapid growth is due to oil and natural gas. Besides oil products, leading industries are metal products, paper, glass, ceramics, farm equipment, oak flooring, mill work, and furniture.

The founder of Shreveport (over 100 years ago) was Henry Miller Shreve. His first task was the opening of the Red River to navigation by clearing from its channel the 200-mile log jam known as "The Great Raft." Navigation in the Red River is again blocked—this time by silting of its bottom and erosion of its banks. But Congress has approved construction of a lateral canal system, roughly parallel to the river's course, which once again will connect Shreveport by navigable water with the Mississippi and the Gulf of Mexico.

Four airlines, six railroads, and more than 25 trucking lines give extensive distribution service from Shreveport to other Louisiana points and communities in nearby Arkansas and Texas.

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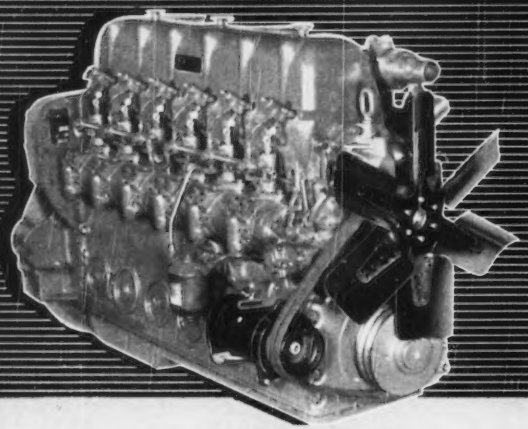

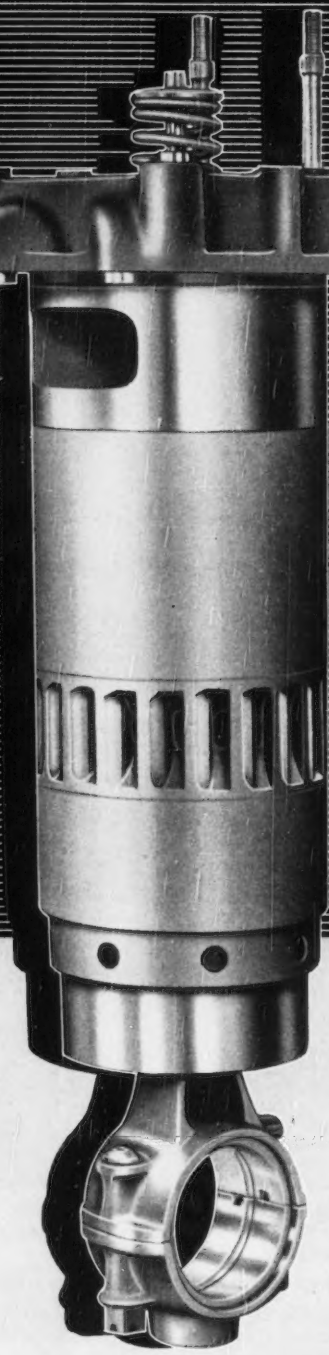

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MEN AND JOBS

Edsel McLean, highway inspector for the North Carolina Highway Department at North Wilkesboro, has been transferred to the engineering staff at Winston-Salem.

Newly-named resident engineers for the North Carolina Highway Department include: **Donald Rentz** at Lexington, **Claude McBryde** at Sanford, and **John H. Burruss** at Asheboro.

Robert H. Peck of Raleigh, N. C., former civil engineer with the United States Geological Survey, has been named city manager of Mooresville, N. C.

Grove Hart, of Asheboro, N. C., senior highway inspector with the North Carolina Highway Department, has resigned to accept a post with the Ben Propst Construction Company of Concord, N. C.

J. Roy Ramsey has retired after 38 years of continuous service with the Mahoning County engineer's office in Youngstown, Ohio. He was an assistant engineer at retirement, and during his years of service, worked on almost all the major engineering projects in the county.

William F. Hagerty, senior district maintenance engineer for the Tennessee State Highway Department, at Gallatin, has retired after 30 years. He served the department initially as an instrument man and advanced to junior engineer, resident engineer, district maintenance engineer, and finally senior district maintenance engineer.

Henry R. Duch has been appointed to a three-year term on the Buffalo Sewer Authority by Mayor Joseph Mruk, who also reappointed to the authority **David J. Laub** for another three-year term.

Gerald S. Rinehart, assistant chief engineer of the Maryland State Roads Commission, has gone with the Knappen Tippetts Abbett Engineering Co. to be chief project engineer on the construction of the Cochabamba-Santa Cruz Highway project in Bolivia for KTA, who are the engineers for the Bolivian Development Corporation. He has had considerable highway experience in Latin American countries, and is a graduate in civil engineering, Lehigh University, 1911.

Charles G. Ashby of Elkin, N. C., district engineer for the North Carolina Highway Department, has been transferred to the division office at North Wilkesboro as office engineer. He has been succeeded by J. F. Bivens.

Phil F. Goodman has been appointed chief of construction with The Prepakt Concrete Co. of Cleveland, Ohio. Mr. Goodman has had 25 years experience in the heavy construction industry. In World War II he served as director of operations for the Tulsa Engineer District. He is a graduate of Case Institute of Technology, 1922.

H. B. Gotaas, head, department of civil engineering, University of California, Berkeley, sailed on the Queen Mary June 8 to visit 10 countries in Europe. The 3-month trip under a World Health Organization travel grant will enable Gotaas to inspect engineering colleges, hydro-electric projects, and sanitation developments.

(Continued on page 67)

Frank Tetzlaft is chief of the engineering division, Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga. This division handles malaria, rodent and fly control and advises the Army's Corps of Engineers on impounded-water health problems.

David Meixner, assistant superintendent for The Preload Corp., talks over prestressing of main-span girder on Walnut Lane Bridge, Philadelphia, Pa., with Dan McKinley, the city's resident engineer on the job—first major prestressed bridge in the United States.

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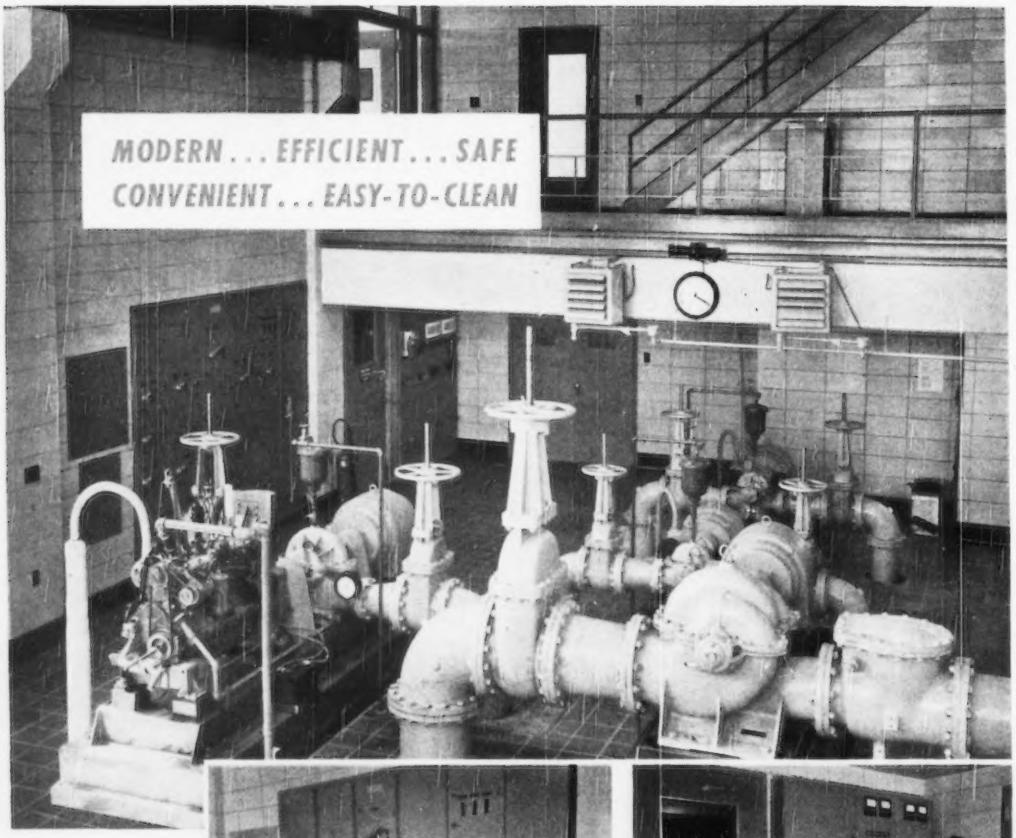

Engineers: Greeley & Hansen
Plant Supt.: Alvin G. Bares

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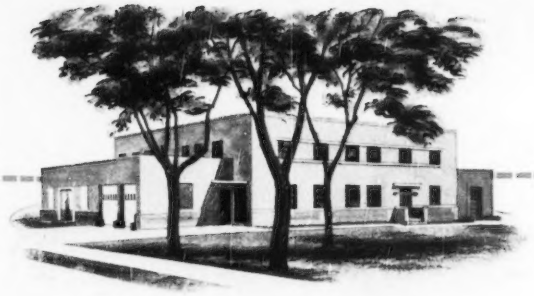


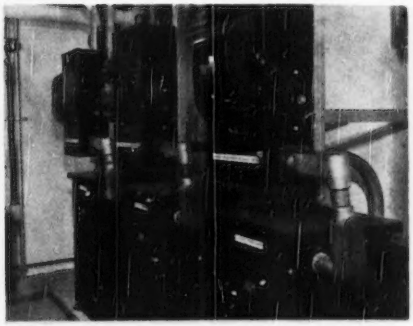
How one town invests in its future

It's not a *big* town but Port Washington, Wisconsin, is looking ahead! Their new pumping and filtration plant serves 5,000 people, taking 500 thousand gallons daily from Lake Michigan. Port Washington, typical of many towns, planned that this new investment should mean dependable service, flexibility for future expansion and reduced pumping costs for 30 or 40 years to come. *Your plant can realize these same advantages.*

The electrical control equipment at Port Washington is Westinghouse throughout. It is the latest, most efficient available today——the best guarantee that the plant will still be modern many years from now. Power is distributed and utilized at maximum efficiency. Safety is paramount—at no point are live parts exposed. All operations are supervised and controlled from one central point—with push-buttons on the working units for localized control when desirable.

Through long waterworks experience Westinghouse has learned how to co-ordinate electrical equipment to best meet the needs of *your particular operation.* And whether yours is a large plant or a small one, Westinghouse can supply everything electrical needed.

When you're planning to build or modernize, get in touch early with your near-by Westinghouse office. You'll make an investment in economical, efficient equipment that will be modern for years to come. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-94858



3 **Step-Down Transformers**—and other high-voltage power apparatus are enclosed in vault behind the wall formed by the control center, switchgear cubicles and locked door.

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In still other cases, bridge piers for example, Monotube strength and stability often saves many cubic yards of concrete . . . because Monotubes seldom need to be surrounded with continuous top-to-bottom concrete. Again time and money are saved!

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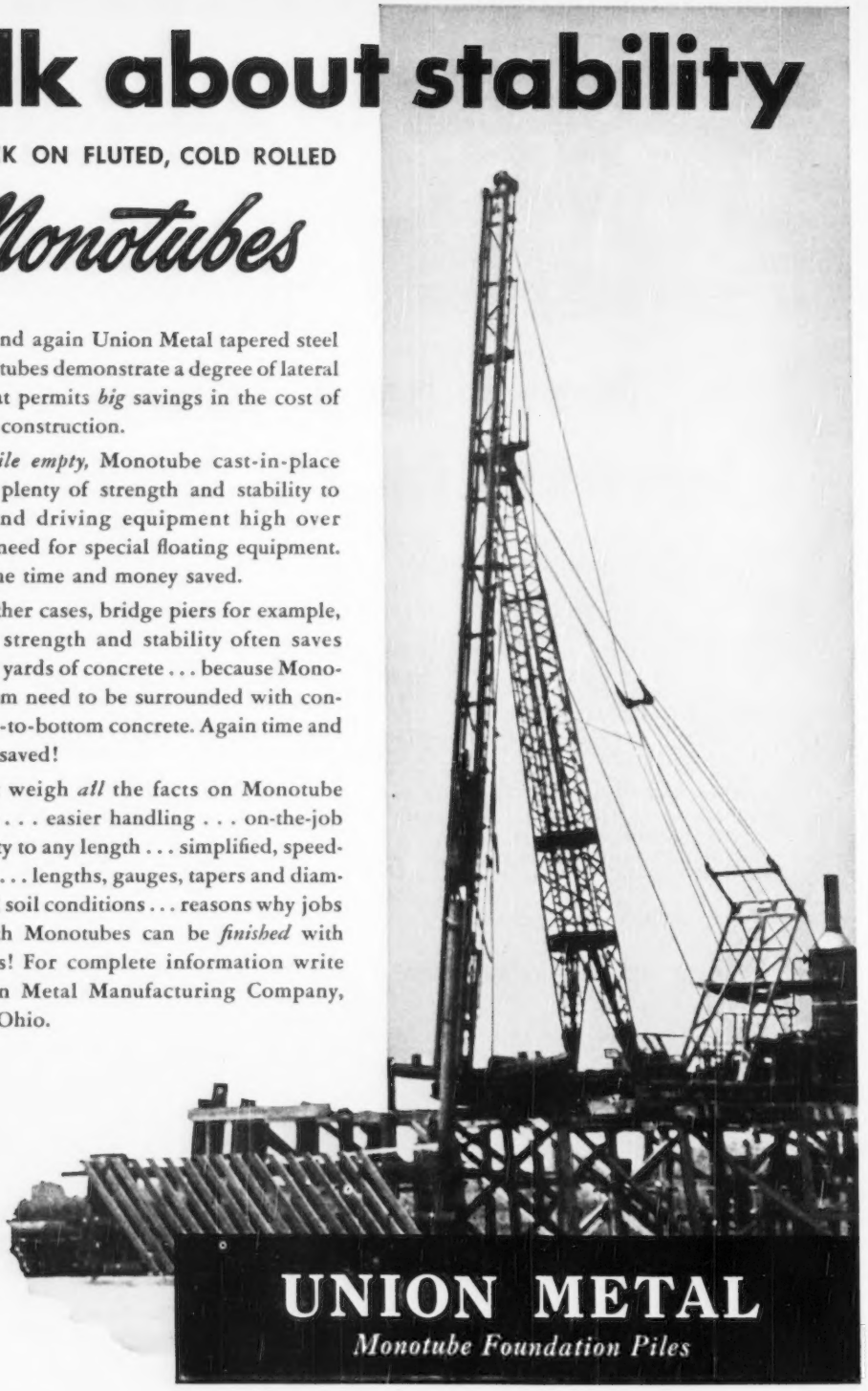

UNION METAL

Monotube Foundation Piles

Col. Henry J. Woodbury, now in command of the New England division, U. S. Army Corp of Engineers, formerly was Western Ocean division engineer at Sausalito, Calif. A graduate of West Point, 1922, he later served as mathematics instructor at the academy. For five years he was assistant professor of military science and tactics at the University of Alabama. From 1939 to 1942 he was assistant division engineer at New York. He was awarded the Legion of Merit for his services in World War II.

City Engineer H. J. Smith of Vancouver, Wash., has been named coordinator of the Clark County-Vancouver civilian defense board, composed of the county commissioners and city council, with **Mayor Vern Anderson** of Vancouver as chairman.

Henry Ward, commissioner of conservation for Kentucky, has been installed as chairman of the Ohio River Valley Water Sanitation Commission, having been named to the group in 1948 and serving formerly as vice-chairman. As a compact commissioner, he recently aided in the formulation of a new law that set up a state water pollution control commission.

Regional Power Manager Roy V. Sprague, who supervised the present hydro-electric installations in the Hoover power plant, has retired after 15 years as a Bureau of Reclamation engineer. His duties will be taken over by Wade H. Taylor, as acting regional power manager.

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EDUCATION and RESEARCH

New courses offered

C.C.N.Y.—A program of special non-credit evening courses in engineering will be offered this fall by the City College of New York, according to Prof. Walter L. Willig, supervisor of the courses. One group is designed to serve as a refresher for engineers who are planning to take the New York State Professional Engineer's examinations in October. The courses will cover structural planning and design, general engineering and engineering economics.

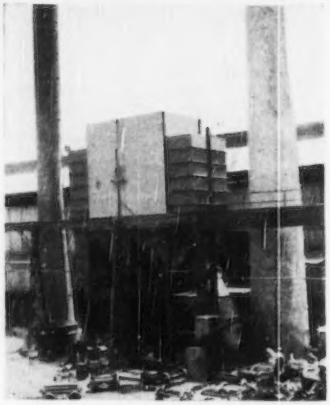
A second group is in building construction and covers the subjects of plan reading and estimating, applied building construction design, and air conditioning.

After a 10-year lapse, the City College is offering a new evening graduate program leading to a master's degree in civil and other engineering. It is based on a 2-year curriculum study recently completed.

Stevens Institute—For municipal officials and employees, Stevens Institute of Technology, Hoboken, N. J., in cooperation with the Metropolitan chapter of the American Public Works Association, Municipal Finance Officers' Association of New Jersey, and the N. J. State League of Municipalities, this fall will offer a program of courses and research in municipal government. Courses will be held once a week for 16 weeks starting the week of Sept. 25. The courses will cover municipal administration, public works administration and municipal finance administration.

State Tech.—N. Y. State Institute of Applied Arts and Sciences, a technical institute under the State University of New York, at 300 Pearl St., Brooklyn, is planning a variety of new courses in the structural field—such as structural steel design, building codes, steel fabrication, concrete design and detailing, and surveying. Subjects continued are architectural theory and design, construction theory, plan reading and estimating.

Airphoto interpretation—Under the direction of the School of Engineering and Engineering Mechanics and the Technical Extension Division of Purdue University, West Lafayette, Ind., a special short course is being given on airphoto interpretation of soil patterns—Aug. 28-Sept. 1. It is designed to instruct in the techniques of interpreting soils and engineering problems from aerial photographs. It will be of value to civilian or military personnel interested in location, design, construction and maintenance of highways, railroads. Airfields, pipelines, transmission lines, and other engineering works.



AIR POLLUTION CONTROL—Work is progressing rapidly on the installation of air pollution controls at the plant of the Columbia Steel Co., a U. S. Steel Corp. subsidiary, at Torrence, Calif. Shown here is the erection of one of four electrostatic precipitators, which when completed, will stand 60 ft high alongside the 126-ft open hearth stacks of the plant.

University of Pittsburgh—civil engineering department in September will introduce a 2-year, 30-credit evening program stressing civil engineering combined with courses in administration and management, leading to the degree, Master of Science.

Civil engineering section includes 12 credits of work on structures, hydrology, soils and highways, and 12 credits in administration, plus 6 credits of special study and thesis on projects related to the student's major interest. Prof. Robert F. Edgar, head of the department is in charge.

Photogrammetry course

At the recent seminar on photogrammetry at the University of Denver a resolution was adopted recommending that a separate course in that subject be included in the civil engineering curriculum of all schools, and that some photogrammetry be integrated with the various surveying, highway and other courses. Attendance was 89, including 41 professors from 34 institutions and representatives of the U.S. Bureau of Public Roads, U.S. Coast and Geodetic Survey, U.S. Geological Survey, R. J. Tipton & Associates, Lowry and Wright airfields, Army Map Service, and equipment manufacturers.

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This new attachment incorporates a patented 38-degree reverse buttress thread. After exhaustive tests, it was selected as the best design to cushion and absorb the destructive reciprocating and rotational forces that tend to wear bit threads or break the threaded extensions on drill rods.

In addition, the attachment permits appreciably more metal in the skirt walls of Carset Jackbits which greatly increases their body strength. This added metal makes the strongest possible bits. This is particularly important in small bit sizes.

In short, even greater economies are now possible from Carset Jackbits. This new attachment is designed to give trouble-free service for the life of the bit.

The Ingersoll-Rand Series 100 attachment is offered in four sizes and covers bit gauges from 1⅜ inches to 3 inches. It is easy to make this attachment . . . upset the drill rods on a sharpener and form the threads on an engine lathe or a Toledo threading machine. Write today for full information to Ingersoll-Rand Company, New York, or any of our 27 domestic branches.

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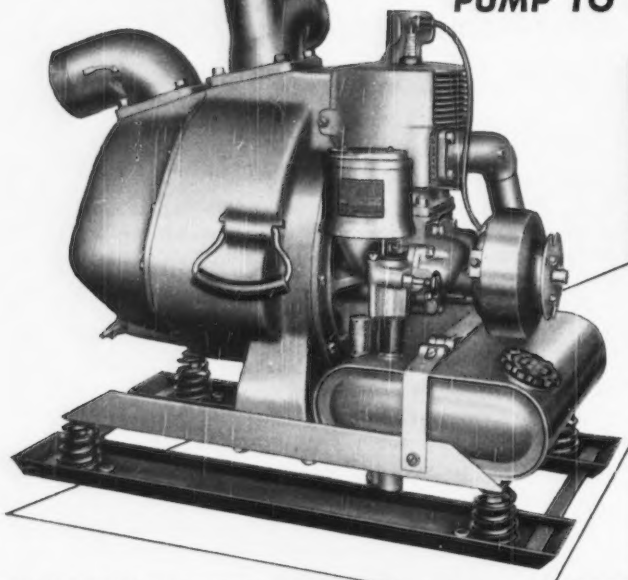

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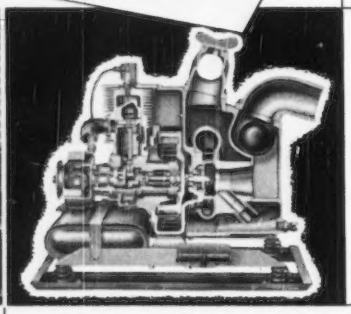

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ELECTIONS AND ACTIVITIES

T. H. Edwards, Montgomery County engineer, has been elected president of the Alabama Association of County Engineers. Other officers elected are: N. E. Agee, DeKalb County, vice-president; John B. Benson, Macon County, secretary; and Travelyn Davis, Pike County, treasurer. The board includes D. H. White, Colbert County; M. T. Smith, LaFayette; B. M. Burks, Hale; L. T. Debardeleben, Talladega; R. E. Taylor, Escambia; and H. N. Coleman, Jr., Crenshaw.

H. E. Foreman, managing director, Associated General Contractors of America, Inc., has announced that the charter application of the North Dakota chapter of the AGC has been approved by the executive commitee of the national organization.

P. L. Barnes of Wilson-Salem elected president of the North Carolina Masonry Association. Other officers: C. K. Smith of Kinston, vice-president; and H. J. Stockard Jr., of Raleigh, secretary-treasurer. New directors: J. B. Linville of Wilson and A. F. Perkins of Fayetteville, Eastern District; W. F. McCanless of Charlotte and Roderick A. Adams of Fuquay Springs, Central District; and J. A. Thompson of Asheville and J. E. Meachem of Statesville, Western District.

R. B. Gilmore is president of the new Engineers Club of Dallas, Tex.

Archer B. Gay of Richmond has been elected engineer-director of the Virginia Road Builders Association.

More Virginia schools – Announcement has been made by the Virginia State Department of Education that it has approved the expenditure of $61,320,718.11 by 27 communities under the existing four-year school building program. New construction is to cost $45,000,000, while current construction for which no bonds are listed is costing $1,400,000, and the sum of $12,000,000 is for new current construction for which bonds have been authorized and $2,800,000 for renovation and repair of existing buildings. Henrico County's large plan calls for $4,250,000 for construction, while Chesterfield County adjoining Richmond has a $925,000 school building program.

CALENDAR

South Dakota Reclamation Association, convention, Pickstown, Sept. 10-11.

Conference on "Ground Facilities for Air Transportation," Massachusetts Institute of Technology, Cambridge, Mass., Sept. 12-14.

Canadian Institute on Sewage and Sanitation, annual convention, Bigwin Inn, Ontario, Sept. 11-13.

W. Va., section A.W.W.A., annual meeting, Pritchard Hotel, Huntington, W. Va., Sept. 13-14.

Convention of Roadmasters' and Maintenance of Way Association, and the **American Railway Bridge and Building Association,** Hotel Stevens, Chicago, Ill., Sept. 18-20.

New England Water Works Association, Poland Springs, Me., Sept. 18-21.

American Society of Photogrammetry, Harvard University, Cambridge, Mass., Sept. 21-22.

Building Research Advisory Board—Research correlation conference, National Academy of Sciences, Washington, D. C., Sept. 26.

Pennsylvania Water Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 26-29.

Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

South Dakota State Association of County Commissioners, Auditors, Highway Superintendents and State Highway Officials, annual convention, Cataract Hotel in Sioux Falls, Sept. 28-30.

National Council of State Boards of Engineering Examiners, Congress Hotel, Chicago, Ill., Oct. 9-11.

ASCE, fall meeting, Congress Hotel, Chicago, Ill., Oct. 11-14.

Public Works Congress and Equipment Show, 9th Regiment Armory, New York City, Oct. 15-18.

Water conference, Engineers' Society of Western Pennsylvania, Hotel William Penn, Pittsburgh, Pa., Oct. 16-18.

National Association of Housing Officials, Detroit, Mich., Oct. 16-19.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Ill., Oct. 18-19.

Pennsylvania section, AWWA, Roosevelt Hotel, Pittsburgh, Pa., Oct. 18-20.

Engineers' Council for Professional Development, Tudor Arms Hotel, Cleveland, Ohio, Oct. 20-21.

National Public Health Engineering Conference, University of Florida, Gainsville, Oct. 23.

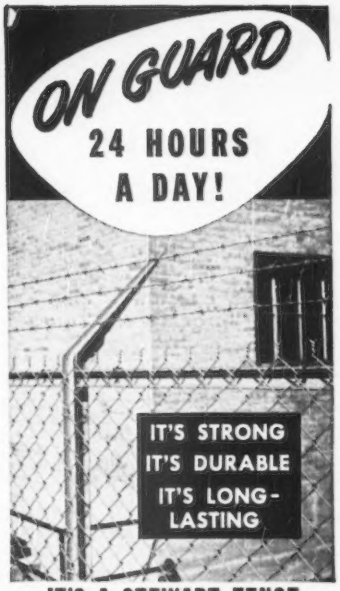
Structural Clay Products Industry, Broadmoor Hotel, Colorado Springs, Colo., Oct. 23-26.

American Institute of Steel Construction, Shamrock Hotel, Houston, Tex., Oct. 23-26.

American Concrete Institute, Mayflower Hotel, Washington, D. C., Oct. 24-26.

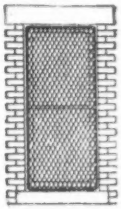
Carolinas Branch, A.G.C., White Sulphur Springs, W. Va., Oct. 30-31.

St. John public works—The Canadian government will spend $1,925,000 on public works this year in St. John, N. B. Major item calls for re-dredging of the Courtenay Bay section of the harbor at a cost of $1,250,000. There will be removed 2,070,000 cu. yd. of material. The addition of a 5-story building to the St. John post office will cost about $500,000. This work is now in progress.



IT'S A STEWART FENCE

Notice the sturdy All-Beam framework . . . the extension arm and line post—an integral unit. Stewart Non-Climbable Chain Link Wire Fence, the heaviest and strongest manufactured, features a number of exclusive structural advantages you can't afford to overlook. Write for folder "Here's why you should buy a Stewart Chain Link Wire Fence."

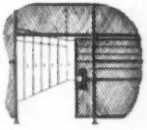


WINDOW GUARD
(Wire or Iron)

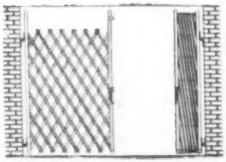
Made with round or channel frames to fit any size or shape opening. When requesting prices please give measurements and send diagrammatic sketch.

WIRE MESH PARTITIONS—Sectional

Fit any height or width. Easily and quickly erected. When writing for prices please give all measurements involved.



STEEL FOLDING GATES



Made in single or double gate construction to fit any width opening. Prices on request. Please give width and height of opening.

THE STEWART IRON WORKS CO., INC.
1767 Stewart Block Cincinnati 1, Ohio

Stewart IRON and WIRE FENCES

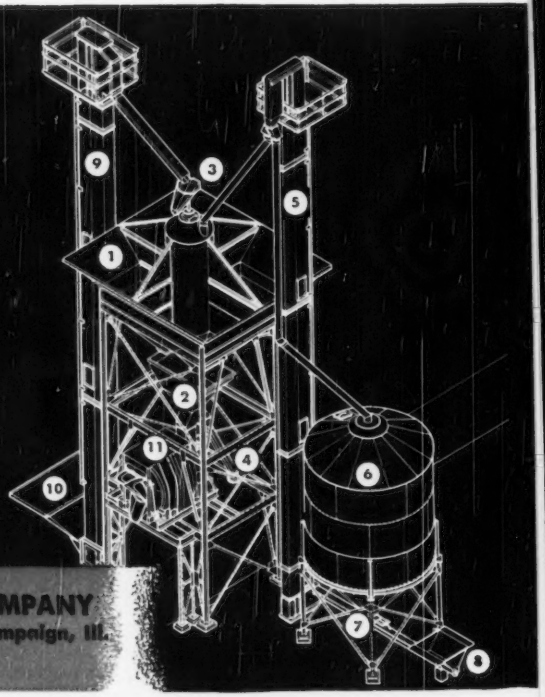
Increase your CENTRAL-MIX PLANT earnings

TO PROVIDE you with the most economical production of concrete, Johnson offers you today's widest selection of portable and stationary plants, all types, sizes and styles . . . engineered to *your exact requirements.* One typical example is the flexible Johnson Central-Mix plant illustrated here with Step-by-Step Bin. Also available are Johnson Octo-Bin plants that can be used with as many as 8 aggregate compartments, 150 to 3,000 yds. overhead storage, and 150 to 1350 bbl. capacities in central cement tank. Ask too, about Johnson Portable-Section, Welded Aggregate and Cement Bins for crane, elevator or conveyor charging.

Over 100,000,000 cu. yds. of concrete have been poured by Johnson-engineered Central-Mix Plants. This practical experience can save you time, money and increase your profits. Whenever you are ready to modernize your present plant or plan for new Central-Mix, Transit-Mix or Concrete Products facilities, it will pay you to write us, or call your local Johnson distributor.

JOHNSON CENTRAL-MIX PLANT GIVES YOU ACCURATE CONTROL . . . LOW-COST PRODUCTION:

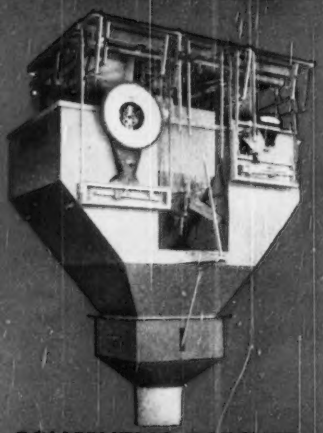
1. This 120 cu. yd. Step-by-Step Bin is arranged for 4 aggregate compartments of 25 cu. yds. each, and has a centrally-located cement tank of 110 bbls. capacity.
2. Concentric aggregate and cement batcher, of 2 cu. yd. capacity, handles all 4 aggregates and the cement. (See photo on opposite page.)
3. Pivoted distributor, mounted at top of bin, feeds aggregates into any of the 4 compartments.
4. Charging chute can load dry-batch mix direct into trucks.
5. Cement bucket elevator has capacity of 300 bbl. per hour.
6. Single-compartment storage silo holds 945 bbls. of cement.
7. Screw-type cement conveyor has approximately 300 bbl. per hour capacity.
8. Hopper for receiving bag cement.
9. Aggregate bucket elevator.
10. Hopper for receiving aggregates from trucks.
11. Heavy-duty, non-tilting Koehring mixer, model 56-S, for accurate quality and high-speed mixing.



KOEHRING PRODUCT

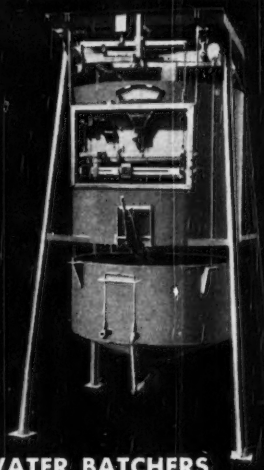
C. S. JOHNSON COMPANY
Champaign, Ill.
(Koehring Subsidiary)

with JOHNSON



CONCENTRIC BATCHER
Prevents Cement Loss

Exclusive Johnson Concentric Aggregate-Cement Batcher gives you control cement feed. Wasteful cement "gunning" is prevented by concentric arrangement of aggregates around the cement batcher discharge. Cement is also weighed on separate scale. Aggregates are weighed on individual beam scales, or accumulative dial scale. Result: you get extremely accurate control and the most efficient use of materials . . . at top batching speeds.



WATER BATCHERS
Improve Concrete Quality

Here's another handy auxiliary unit that can help increase your mix plant efficiency — Johnson Water Weigh-Batchers. Capacities: 120 gallons or 1,000 lbs. for batches up to 2 yards . . . and 240 gallons or 2,000 lbs. for batches up to 5 yards. Semi- and full-automatic types. They're fast-weighing . . . accuracy is not affected by changes in water temperatures.

J906

UTILITY-SIZE, MODEL 221

TRENCHLINER®

For trenches 16 to 36" wide, 8'-6" deep, check this Parsons 221 Trenchliner. Fast on highway drainage . . . digs up to 3½ cu. yds. per min., depending on depth, width of trench. Flexible for crowded city work . . . has power-shift, reversible conveyor . . . shiftable digging boom cuts within 10" of either side. Ask your Parsons distributor for more facts or write for catalog.

PARSONS COMPANY
Newton, Iowa
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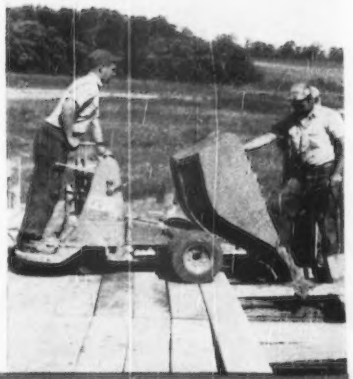
LOW-COST, FULLY-POWERED

MOTO-BUG

On your wheelbarrow work, there's no pushing . . . no pulling with Kwik-Mix *fully*-powered Moto-Bug. Travels 1½ to 4 m.p.h., forward *and* reverse. Has positive, direct steer; *standard make* 4 h. p. air-cooled gasoline engine; 10 cu. ft. bucket; controlled gravity dump. 1200 lb. capacity flat-bed platform, and operator riding step also available.



KWIK-MIX COMPANY
Port Washington, Wis.
(Koehring Subsidiary)

HEAVY-DUTY HALF-YARD

KOEHRING 205

For top performance in the ½-yd. excavator class, check Koehring 205's independent traction, self-adjusting main clutches, simple, heavy-duty construction . . . quick convertibility from ½-yd. shovel or pull shovel to 7¾-ton crane, clamshell, dragline, on crawlers or rubber-tires. See your Koehring distributor, or send for big 28-page catalog.

KOEHRING COMPANY
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NEVER BEFORE

—a supreme highway tire with positive off-the-road traction!

- **NEW NON-SKID SAFETY**
  —on spearheaded tread—in rain, snow, slush, sleet.
- **NEW ALL-ROAD, ALL-LOAD MILEAGE**
  —vastly reducing all tire costs.
- **NEW JOB-FITTED TREAD COMPOUNDS**
  —to fit every on-and-off-the-road operation.
- **WITH TIME AND TON-MILE SAVINGS NEVER POSSIBLE BEFORE**
  —no more job-failure layover on or off the road.

MADE TO ORDER FOR YOU

In the most extreme general-construction service —over sharp-edged slag—through boggy marshland—out of deep excavations filled with slippery muck, across back roads and highways—this Mid-Century tire has shown complete mastery. Has made that off-the-road, on-the-road construction problem a thing of the past!

COMPLETE PROOF AND JOB-FITTED SPECIFICATIONS BEFORE YOU BUY
A PHONE CALL DOES IT!
Contact your U. S. ROYAL Distributor TODAY

THE GREAT NEW *Mid-Century*

FLEETMASTER

U.S. ROYAL TIRES

UNITED STATES RUBBER COMPANY

OBITUARY

A. Clinton Decker, 63, who died recently in Birmingham, Ala., was a C.E. graduate of Cornell, 1909. From which date to his retirement in October, 1949, he was sanitary engineer for the Tennessee Coal Iron and Railroad Co. He was a member of the engineering commission for the Birmingham Industrial Water Supply which surveyed sources of supply and directed the design and construction of the system. In the first world war he designed and constructed the water supply and sewerage systems for the Chickasaw Ship building Co. at Mobile. He had served as chairman of the sanitary engineering division of the A.S.C.E. He was editor of the forthcoming "Manual of Water Quality and Treatment", for which he received the John M. Diven Medal.

Fred Merritt Billings, 72, retired civil engineer, died recently at San Diego, Calif. He was a graduate of the University of Arkansas. He had lived in San Diego since 1914 though his work as a construction engineer took him throughout the world. In World War I he was construction quartermaster at Camp Kearny. Later he was a civil engineer with the 11th Naval District at San Diego.

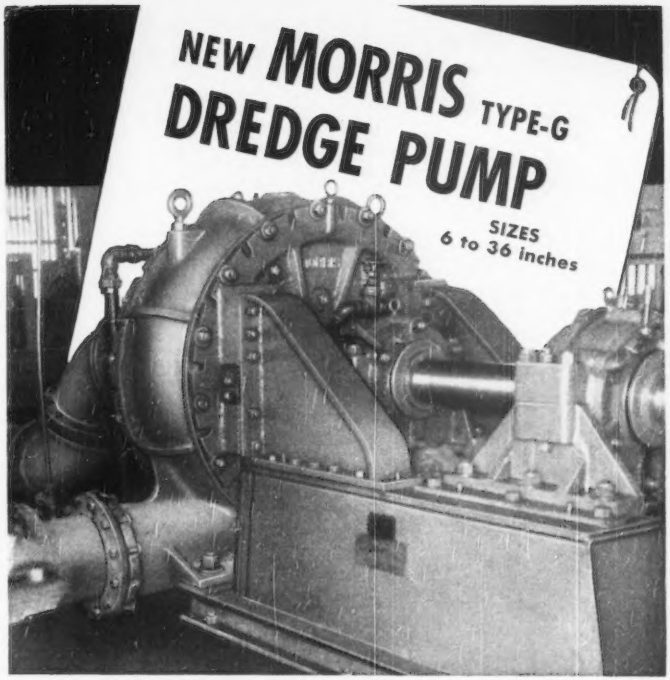
Frank O. Lang, 63, formerly Polk County engineer at Des Moines, Iowa died at Long Beach, Calif. recently.

William J. Durning, 65, an engineer on the construction of the Panama Canal died Aug. 15 at Oxnard, Calif. when he was working for the U.S. Navy.

Lewis M. Martin, 73, a civil engineer who served the Iowa State Highway Commission for 33 years, died recently in Council Bluffs. He was a district engineer when he retired two years ago.

William Thomas Riley, 55, engineer and ship-building specialist for the production office of the National Security Resources Board, died Aug. 8 in Bethesda, Md. He was an ensign in the Navy in World War I, and worked for many years in different shipyards. In 1941 he moved to Washington and served as assistant director of the Contract Settlement and Surplus Property Division of the U. S. Maritime Commission.

Cyril C. Agee, 62, a structural engineer in the Department of the



Your ticket to a

LONG RUN PERFORMANCE

with Minimum Power Consumption

What do we all want most in a dredge or materials handling pump? There is only one answer — *the lowest possible overall cost per yard or ton.* You've got it in the new Morris Type G. Intervals of down-time are few — because Type G is simple, rugged, fool-proof. Power consumption is cut to the bone, over a large range of capacities — through long or short pipe lines — against high heads or low. You'll be amazed at the performance of this new Morris Dredge Pump — but take a look at these design and construction features and you'll know why this "work horse" is being called "the most efficient dredge pump ever built."

1. Runs maximum length of time under high, sustained output—without replacements. That means LESS DOWN-TIME.
2. Designed with fewest possible wearing parts—and these have longer life. That means LESS DOWN-TIME.
3. No complicated seals or sealing rings—less vulnerable points. That means LESS DOWN-TIME.
4. Unusually easy to dismantle, and reassemble. That means LESS DOWN-TIME.
5. Has Morris exclusive balanced impeller—less thrust—longer bearing life. That means LESS DOWN-TIME.

Just issued — Write today for detailed literature about this New Morris Type G Dredge Pump

MORRIS MACHINE WORKS
Baldwinsville, N. Y.

MORRIS *Centrifugal Pumps*

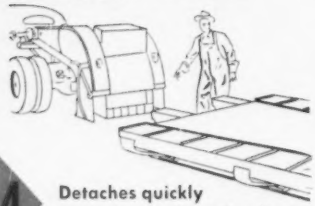
Branch Offices in Principal Cities

MAKE YOUR NEXT TRAILER

THE *Distinctively* DIFFERENT

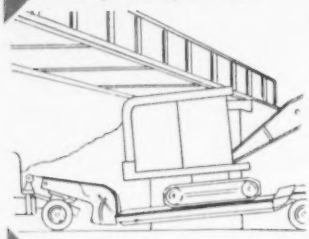
ROGERS POWER LIFT

Demountable Gooseneck Trailer

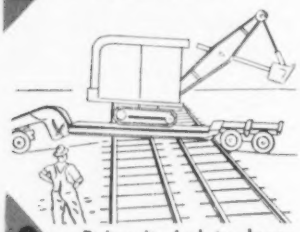


1 Carries heavier loads faster and more profitably on larger tires.

4 Detaches quickly for fast, easy front loading.



2 Stoops to clear low overhead obstructions.



3 Raises its deck to clear high banked crossings.

YOUR trailer can be merely a heavy vehicle or a versatile money-making machine like this new Rogers unit.

It will haul heavier loads, with less elapsed time under the varying road conditions encountered than any trailer heretofore available.

The driver, using the truck winch, can detach the gooseneck, load or unload equipment, and reattach it in about 5 minutes. He can raise or lower the front of the deck as explained; or he can quickly load non-powered or disabled equipment with remarkable speed.

Get the information about this revolutionary trailer before buying any new equipment.

Export Office: 50 Church St., N. Y. 7, N. Y.—Cable Address—"Broseites"

Developed by The Trailer Pioneers

ROGERS BROS. CORP. ALBION PENNA.

Army for more than 20 years, died Aug. 12 in Washington, D. C. Mr. Agee joined the department in 1929 after working for an architectural firm in Bluefield, W. Va. He had designed several of the Army's largest buildings, including Fitzsimmons General Hospital, Denver; Army-Navy General Hospital, Hot Springs, Ark., and installations in Alaska and Panama.

Louis Schulman, 50, an employe of the department of bridges, Chicago, for 25 years, was killed in an automobile accident on Aug. 16. He was structural engineer assigned to bascule bridge work. He was a graduate of the former Armour Institute.

Walter H. Searles, 68, construction engineer for the Thompson-Starrett Co., Inc., New York, died in New Rochelle, N. Y. Aug. 11.

John Christopher Staser, 74, retired civil engineer with the Washington State Highway Department, died Aug. 7 near Seattle, Wash. He had been in the Seattle area for more than 30 years, first with the Northern Pacific Railway and with the Highway department since World War I. He retired last year.

Edward Thorne, 65, died Aug. 6, in Halifax, N. S. Educated at St. Andrew's College, Dalhousie University and Nova Scotia Technical College, Halifax, he was a consulting engineer with the Standard Construction Co., for the last 15 years.

Hugh A. Morrison, 67, died at Amherst, N. S., Aug. 9. He started in civil engineering in 1905, with MacKenzie & Mann, Toronto, and worked in Ontario. He had been with the Nova Scotia highways department the last 20 years, and for the last 8 years divisional engineer.

Ralph Oliver Anderson, 53, supervisor of the analytical control section of the Photographic Interpretation Center at the Washington Naval Receiving Station, died Aug. 23 in Washington, D. C. A graduate of Michigan College of Mining and Technology, he worked for the Tennessee Valley Authority in Chattanooga and Knoxville before going to Washington.

Leo G. Lynch, project manager for Morrison-Knudsen Afghanistan, Inc., died in Afghanistan in mid-August. He had been in charge of all construction projects being built by M-K for

(*Continued on page 79*)

Jaeger paver-type aggregate spreader

Self-propelled — 4 wheel drive.

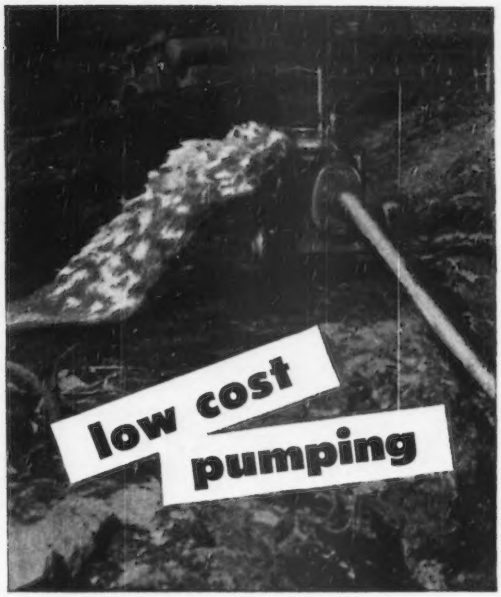
Operates entirely on subgrade — no displacement of newly-spread materials. Blends joints.

Lays up to 9" thickness, up to 12½' width, with straightedge accuracy.

All base and surface aggregates, plant-mixed stabilized soil or free-flowing bituminous mixes.

So low in cost you can use two spreaders in tandem to lay full width base, roll in one operation, keep your higher-priced paver busy laying top course — at tremendous saving. Ask for Catalog SPS-9.

"Teams" with this Jaeger Bituminous Paver: Latest type precision machine for all types of bituminous materials — self-adjusting to widths to 12½', automatic leveling, paves flush to curbs, gutters, operates entirely on subgrade or compacted course. Ask for Catalog BP-9.



JAEGER invites 5-way comparison with any other pumps

1 - Actual priming speed
2 - Vacuum, capacity and pressure
3 - Gallons of water moved per gallon of fuel
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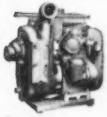
5 - Hours of service per dollar invested



1½" and 2" Aluminum Pumps: 5100 and 9000 gph. Replaceable liners, stainless steel shell fittings.

Heavy Duty 2", 3", and 4" Portables: Also lighter utility models.

Slow-Speed, Long-Life 6", 8", 10" Pumps —Full capacity at 1450 rpm instead of usual 1800, for all dewatering service.

2" to 8" Pressure Pumps for jetting and supply pumping at higher heads.

See your Jaeger distributor or send for complete Catalog P-10.

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Leading distributors in 130 cities of the United States and Canada sell, rent and service Jaeger Engineered Equipment

PUMPS • AIR COMPRESSORS • MIXERS • HOISTS • TOWERS
BITUMINOUS PAVERS • CONCRETE SPREADERS AND FINISHERS

Nearly every plant has need for a bucket elevator—lifting material up into the air so that something else may be done with it. A certain height — certain capacity — certain results. There is a bucket elevator in the broad Jeffrey line to do that job to your complete satisfaction. Standards have been worked out—to save you time—to save you expense in making layouts. Complete drawings to suit each particular elevator. We will go into detail.

COSTS GO DOWN

This large plant utilizes Jeffrey Bucket Elevators in the preparation of carbide.

Chains
Crushers
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Feeders
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THE JEFFREY

MANUFACTURING COMPANY Established 1877

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Complete Line of Material Handling, Processing and Mining Equipment

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Baltimore 2	Chicago 1	Detroit 13	Jacksonville 2	Pittsburgh 22
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Boston 16	Cleveland 13	Houston 5	New York 7	Salt Lake City 1
Buffalo 2	Denver 2	Huntington 19	Philadelphia 3	Scranton 3

the government of Afghanistan. Prior to his transfer there, he was M-K's project manager on the Delta-Mendota canal project in California.

Ernest H. Gillette, 59, a civil engineer who had been associated with Jackson & Moreland, Boston consultants, died at Needham, Mass., Aug. 20.

Samuel Alfred Taylor, 86, civil and mining consulting engineer, died Aug. 20 in Wilkinsburg, Pa. He was dean of the University of Pittsburgh School of Mines from 1910-1912. He was a graduate of Western University of Pennsylvania, in 1887.

Dr. Richard P. MacKnight, 61, who recently retired from the Massachusetts Department of Public Health as director of the division of hospitals, died in Boston Aug. 22.

William T. Sherman, 83, Montgomery County road superintendent at Dayton, from 1919 to 1934, died Aug. 16. He later was a civil engineer with the Ohio Highway Department until he retired in 1936.

Charles W. Maxwell, 52, a former president of the New York State Chapter, Associated General Contractors of America, died Aug. 21 in Albany, N. Y. He was president of the Albany Gravel Co. and Ready Mix Concrete and Supply Corp.

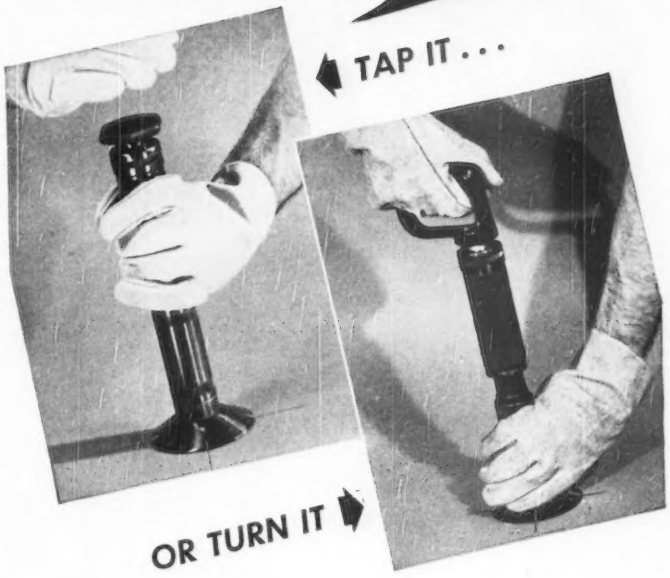
Frederick A. Baynes, 88, former head of the William Baynes Construction Co., Buffalo, N. Y., died Aug. 21. The contracting firm was founded by his father, William Baynes. The son took over the business on his father's death in 1905. He continued to operate the firm until his retirement in 1930.

Lt. Col. William Orr, 34, assistant chief of the St. Paul, Minn., district of the Army Engineers, was drowned in the Mississippi River, Aug. 23 as a result of a parachute mishap. He had applied for transfer from the Engineers to the Paratroops.

Carson G. French, 71, a construction engineer in Cleveland, Ohio, for the last 35 years, died there Aug. 20. He was a graduate of Rose Polytechnic Institute, 1904.

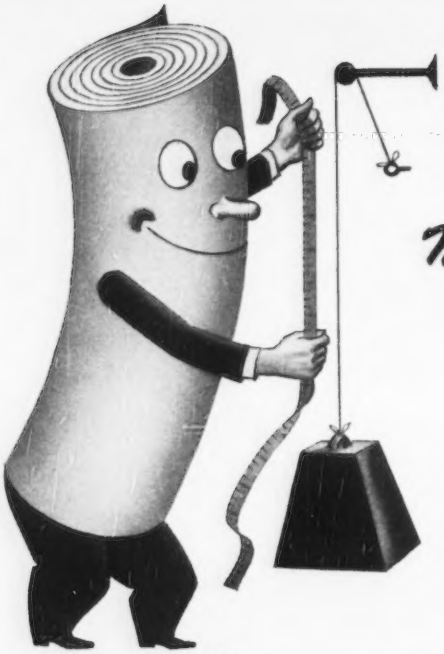
Wilkie Collins, 57, former traffic engineer and assistant to the city commissioner of railways in Rochester, N. Y., died Aug. 18 in Miami, Fla. He had retired in 1948. He was graduated from Rensselaer Polytechnic Institute. His first position was traffic engineer in Newport News, Va.

IMPROVED
Ramset Tool
FASTENS FASTER, EASIER
into steel or concrete



Select the operating method that best fits the work. Load the tool with your choice from RAMSET'S 76 steel drive pins and threaded studs. Then **TURN IT . . .** or **TAP IT!** The improved RAMSET DUAL-ACTION TOOL fastens instantly into steel or concrete. Only RAMSET gives you this *dual choice* . . . plus many other important advantages that make RAMSET the outstanding method for fast, easy, economical fastening. Ask for details and 15-minute demonstration of how you save time, money, trouble with dependable RAMSET FASTENING SYSTEM.

Ramset Fasteners, INC.
12117 BEREA ROAD • CLEVELAND 11, OHIO
PIONEER IN POWDER-ACTUATED FASTENING



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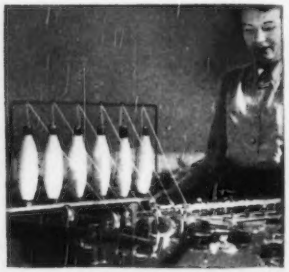
Makes the Big Difference

In TARPAULINS

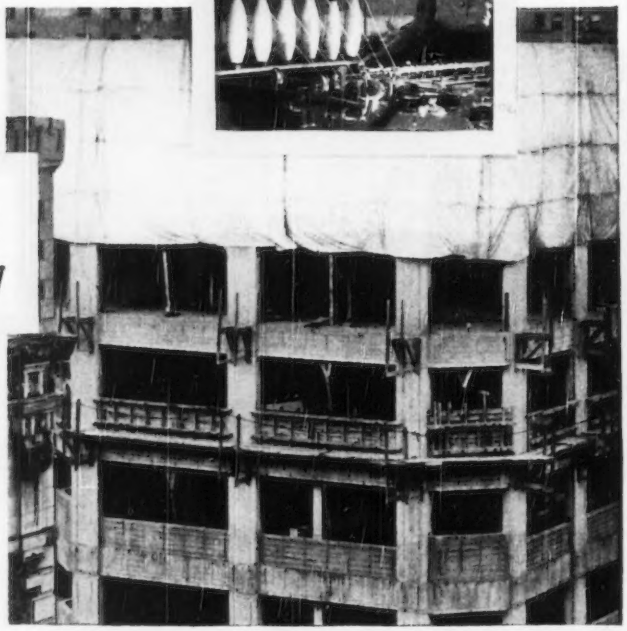
TESTING STRENGTH AND ELONGATION OF YARN WITH MOSCROP TESTER. This unit automatically tests 6 strands of yarn at one time. One of a series of comprehensive laboratory controls throughout production to assure fabric uniformity in all Mt. Vernon-Woodberry products.



MT. VERNON EXTRA

Gives You

Greater Fabric Uniformity



The greater uniformity of Mt. Vernon Extra Duck assures you the two most important qualities you want in tarps — top protection and top wear. You'll find your repair and replacement costs reduced considerably.

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MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
October Materials and Labor Prices will appear in the October 5, 1950 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots incl. $1.00 per bbl. for bags, cash. dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over 50 c.y., del.
	Cloth	Paper	Bulk	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand gray	Lt. wgt. agg.	
Atlanta	....	$3.43	$3.19	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.1725	$0.1725	$11.00
Baltimore	....	3.39	3.14	2.40‡a	2.40‡a	1.95‡a	2.60‡a	2.70‡a	2.45‡a	2.45‡a	.16	.16a	10.25
Birmingham	....	3.00	2.68	2.24	2.24	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston	....	3.67	3.41	2.50a	2.50a	2.50a	1.60a	1.70a	....	....	.196	.205a	10.45h
Chicago	....	2.99	2.74	2.75‡b	2.75‡b	3.20‡b	2.75‡b	2.75‡b	2.00‡	2.00‡	.20	.20b	11.00
Cincinnati	....	3.24	3.08	2.00‡c	2.25‡c	1.90‡c	2.00‡h	2.00‡h	1.50	1.50	.19	.205	10.15f
Cleveland	$3.83	3.03	2.75	1.90ef	1.65f	1.55	3.55‡a	3.55‡a	2.75‡	2.75‡	....	.23	12.35g
Dallas	3.54	2.74	2.49	2.00	2.15	1.75	2.10	2.15	....	....	.089e	.125	9.30
Denver	....	3.54	3.29	1.85	2.00	1.15	....	....	....	....	.20	.23a	9.65
Detroit	....	2.98f	2.73	3.25‡b	3.25‡b	3.00‡b	3.35/3.50‡	3.35/3.50‡	3.50‡	3.50‡	.18	.19a	9.85f
Kansas City	....	3.13	2.88	1.90	1.90	1.50‡	1.95a	1.95a	....	....	.175aq	.215e	10.40‡b
Los Angeles	....	3.72a	3.32a	2.00‡a	2.10‡a	1.85‡a	1.98‡a	1.98‡a	....	....	.11f	.215	10.00‡hm
Minneapolis	....	3.43cd	3.17cd	2.30‡aq	2.30‡aq	1.35‡aq	2.40‡aq	2.40‡aq	....	....	.23s	....	10.90‡t
Montreal	....	2.56ac	2.41ac	.....	2.50hi	1.90i	.85ij	1.10ij	....	....	.22	.20a	9.05ek
New Orleans	....	3.05e	2.70e	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.40
New York	....	3.49	3.24	2.10bk	2.10bk	1.45bk	2.35bl	2.35bl	....	....	....	....	11.00a
Philadelphia	3.93/4.23‡	3.13/3.43‡	2.87/3.17‡	2.55‡	2.65‡	2.05‡	2.00‡	2.05‡	1.75	1.65	.20/.24	....	11.15
Pittsburgh	3.90	3.18	2.85	2.05‡	2.05‡	2.00‡	2.50‡	2.50‡	2.05	2.05	.21d	.21d	11.00
St. Louis	....	2.99/3.05b	2.80b	2.40/2.60‡am	2.40‡am	2.00/2.40‡am	1.60j	1.60j	1.15	1.15	.215	.25es	9.40
San Francisco	....	3.39	2.99	1.86	1.86	1.96	1.96	....	....	....	....	.25e	10.75e
Seattle	....	3.55a	3.05a	2.75‡bm	2.75‡bm	2.75‡bm	3.50‡bm	3.50‡bm	....	....	.22j	.3135j	10.25j

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers' comm. not incl. *d* Dealers sell only LCL. *e* Plus switching charges. *f* Paying up to $3.80 for cement brought in from outside sources.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ¾". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5 ⅓ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *s* Less 2% for cash. *j* Less 1% for cash.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10-100 cu. brackets. *e* 2,000 lb. concr. *f* 2500 lb. comp. *g* Aver. haul 7–9 mi. zone. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discounts 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 25¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.40†	Buffington, Ind.	$2.30	Steelton, Minn.	$2.40	Muskegon, Mich.	$2.50†	Toledo, O.	$2.40†
Clinchfield, Ga.	2.40†	Independence, Kan.	2.30	Leeds, Ala.	2.25	Saginaw, Mich.	2.35†	Milwaukee, Wis.	2.40†
Kingsport, Tenn.	2.40†	Hannibal, Mo.	2.35	Duluth, Minn.	2.40	Wyandotte, Mich.	2.40†	Green Bay, Wis.	2.40†
West Des Moines, Iowa	2.45†	Northampton, Pa.	2.40	Hudson, N. Y.	2.40	Buffalo, N. Y.	2.40†	Ironton, O.	2.40
Nazareth Pa.	2.40†	Universal, Pa.	2.40	Alpena, Mich.	2.25†	Oswego, N. Y.	2.60†	Montreal City	2.21
Bath, Pa.	2.40†	Waco, Tex. (+ 10¢ tax)	2.30	Detroit, Mich.	2.40†	Cleveland, O.	2.40†	W. Winfield, Pa.	2.40†

†*Prices to hold for third quarter of* 1950

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. / 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore	150.00‡	57.70‡	.....	$20.00	.....	$.0809	$0.14	$.08	$.16	$.08s	$.08	$0.11
Birmingham	.....	32.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	$35.50a	.1036a	.185a	.115asw	.205asw	.10as	.113a	.205a
Chicago	155.00‡a	85.00/88.00‡b	3.25/4.00‡f	20.25b	30.25b	19.25bw	29.25bw	.0875bw	.16w	.075b	.....	.....
Cincinnati	.....	.....	.....	21.50k	...	.095	.0965	.095w	....	.....	.....	....
Cleveland	.....	51.00d	3.70g	24.00	33.50	24.00w	33.50w	.10w	.22w	.10	.11	25
Dallas	e	40.00	e	23.95	42.99	.1012	.1398	26.99	47.97	.0987	.1062	.1423
Denver	.....	46.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	82.00	.....	26.65	....	12.00w	.....	.0976w	.....	.0971	.....	.197
Kansas City	e	e	e	18.05cl	....	.....	.....	.07ew	.0725w	.061e	.....	.....
Los Angeles	e	.....	e	12.50dm	....	12.50dw	.....	14.00d	.....	12.50dw	.0775f	.1575f
Minneapolis	.....	.....	2.83h	25.50	36.00	24.00w	35.00w	24.00	35.00	.09	.12	.22
Montreal	137.00	e	e	27.00n	36.65n	16.70nu	18.50nu	16.30nu	18.30nu	13.20ns	.184n	.225ns
New Orleans	.....	.....	.....	16.50e	....o	16.50ew	.....o	.08ew	.....o	.0775	.08	.1425t
New York	.....	.....	2.35f	23.50	25.86q	22.50w	41.88qw	.0940w	.1767qw	.0890	.0940	.1747q
Philadelphia	150.00	110.00	4.06	20.50	....	19.50w	.....	.085w	.....	.....	.....	.....
Pittsburgh	165.00	42.00	4.50	22.00	35.00	.10	.20	27.00	39.00	.095	.09	.20
St. Louis	.....	.....	.....	19.25f	.....	.1633	.....	.0841w	.....	.15	.....	.....
San Francisco	.....	62.75e	.....	14.50q	30.00qp	14.50qkw	....	16.50q	....	.....	.08	.14
Seattle	.....	.....	.....	14.50A	35.00A	15.00kw	.....	.165kw	.205krw	16.00kw	.08A	.09h

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6# treat. *g* 3". *h* 8# treat.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* Bulk refinery. *j* F.o.b. refinery, Englewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* Use of used drums. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 55-gal. drums. *u* Per 100 gal. *v* Per ton. *w* Per gal.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES—PLATE	REINF. BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.40	$3.45	$7.25		$68.00	$75.00	Not	$4.40	$5.60	$4.20	....
Chicago Area	3.40	3.45	7.25	$4.20	68.00	75.00	avail-	4.40	5.60	4.20	....
Pittsburgh Area	3.40	3.45	7.25	4.20	68.00	75.00	able	4.40	5.60	4.20	....
Buffalo Area	3.45	3.45	7.25	4.20	68.00	75.00	....	4.40	5.60	4.20	$8.85
Cleveland	....	....	7.25	....	.....	.....	....	....	5.60	....	8.85
Youngstown Area	....	3.45	....	....	.....	.....	....	....	....	....	....
Geneva	3.40	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	4.15	....	....	.....	.....	....	....	5.60	....	....
Pueblo	3.40	3.45	....	....	68.00	75.00	....	4.40	5.60	4.20	8.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	5 tons to carload lot *b* New billet	REINFORCING BARS Per 100 lb., base price *u* Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH *k* Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No 6 & 6 wires
Atlanta	$6.03	$5.85	$5.85	$.025	$.10	$31.50	$31.50			
Baltimore	6.09	5.09*d*	....	....	.10	40.00	43.00			
Birmingham	5.25	5.25	5.25	.05	.15	42.00*p*	44.50*p*			
Boston	5.75*k*	5.56*k*	5.56*kr*	....	.10/.15	32.00	34.50			
Chicago	5.25	4.50*ff*	4.50*ff*	.0625	....	32.00‡	34.50‡			
Cincinnati	5.79*r*	5.54*r*	....	....	....	34.00*zz*	36.50-*zz*			
Cleveland	5.37	4.47*e*	....	....	.10	34.00‡	36.50‡			
Dallas	8.15	5.80	5.80	....	....	43.50	46.00			
Denver	6.65	6.75*e*	....	....	....	48.00*s*	57.00*ps*			
Detroit	5.64	5.59*n*	....	....	.10	37.00	46.00			
Kansas City	5.65*nn*	5.50*e*	....	....	....	35.50	38.00			
Los Angeles	5.90*fkk*	5.70*g*	....	....	.15	44.50*f*	49.50*kk*			
Minneapolis	5.61*kk*	6.12*ll*	6.12*ll*	....	.15	34.00	36.50			
Montreal	6.75*t*	4.75‡	4.75*g*	....	....	44.10*h*	46.80*h*			
New Orleans	....	5.40*ok*	....	.05	.10	38.50	41.00			
New York	5.75*r*	5.69	5.54	....	.20	35.50*st*	38.00*st*			
Philadelphia	5.45	5.60	....	....	....	35.50‡	38.00‡			
Pittsburgh	5.20/5.30	5.20/5.30	....	....	.10	32.50	34.00			
St. Louis	5.58	4.44*e*	4.44*e*	....	....	45.00*aa*	50.00*aa*			
San Francisco	6.00*v*	5.75‡	....	....	.15	37.50	40.00			
Seattle	4.05*e*	5.35*ed*	....	....	....	52.00*mmm*	42.00*nnmx*			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.46 — F.o.b. Mill: Monessen, Penn., $2.46

A.P.M.* Joliet, Illinois, Donora, Penn., $1.75 — F.o.b. Mill: Monessen, Penn., $1.75

A.P.M.* Joliet, Illinois, Donora, Penn., $2.58 — F.o.b. Mill: Monessen, Penn., $2.58

* At Producing Mill.

‡ Delivered. *b* 1–5 tons, add 35*c*. Less than 1 ton, add 50*c*. *c* 20 tons or over base. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* Last price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 15 tons base. *p* Del. of 5000 sq. yd. or less. *q* Std. ribbed. *s* lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra—1 in., 1¼ in. 1½ in., 10*c*, ¾ in., ⅞ in., 15*c*, ¼ in., 25*c*, ⅛ in., 50*c*, ⅜ in. 80*c*, ½ in. $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2 5 lb. per sq. yd. *y* $0.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales tax. *hh* 10,000–19,999 lbs. *ii* Rolled at Geneva mill. 400–3999 lbs. *kk* ¼" ribbed. *ll* 5 to 8 tons. *mm* 2% off for cash. *nn* 10 tons or over.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	ƒ C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *a*	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13–44T std. 8 in.	std. 12 in.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14–41 12 in.	24 in.
Atlanta	$89.50	$0.43	$0.67	$3.30	$7.00	$114.00	$140.00	$0.45	$2.00
Baltimore	93.86	.483	.9315	3.87	10.35	168.60	240.40	.85	2.35
Birmingham	82.50	.40	.72	2.84	....	210.00‡	375.00‡	.90	2.50
Boston	102.46	.415*urx*	.8647*urx*	3.78*urx*	10.50*urx*	181.65	280.98	1.45‡*mg*	3.60‡*mg*
Chicago	96.49	.60	1.15	4.50	13.25	150.00‡	270.00‡	.70	2.35
Cincinnati	94.90	.476	.918	3.87	10.25	148.80‡	230.70‡	.60*m*	2.25*m*
Cleveland	97.13	.406*x*	.783*x*	3.33*x*	9.1225*x*	140.00	219.00	.72*m*	2.75*m*
Dallas	99.28	.436	.822	3.234	9.17	.....	.....	.49	1.60
Denver	104.36	.41*dd*	.71*dd*	2.98*dd*	....	.....	.....	.74*dd*	2.50*dd*
Detroit	92.13	.63	1.21	4.86	13.12	210.00*m*	330.00*m*	.75	3.00
Kansas City	98.41	.43*m*	.76*m*	3.00	....	215.00	....	.65	2.25
Los Angeles	111.06	.468‡	.927‡	4.532‡	11.298‡	212.30	342.60	.79	2.25*ff*
Minneapolis	94.86–100.67	.62*mo*	1.12*mo*	4.55*mo*	....	.....	.....	1.29*h*	3.67*h*
Montreal	90.00	.77*z*	1.35*z*	4.47*z*	7.23*z*	.....	.....	72.00*kaa*	218.00*khaa*
New Orleans	92.68	.453	.82	4.41	8.85*	235.00*bb*	412.00*bb*	.65	2.29
New York	97.80/102.50	.58	1.10	4.40	11.99	.....	.....	1.00	2.50
Philadelphia	90.47	.55	1.05	4.15	10.75	240.00‡	300.00‡	1.35*h*	3.40*h*
Pittsburgh	97.76	.36*m*	.70*m*	2.70*m*	6.625*m*	147.50	230.00	1.05*h*	2.50*h*
St. Louis	94.27	.51	.92	3.80	9.00	.....	.....	1.15*il*	2.60*hl*
San Francisco	111.06	.55*d*	1.08*d*	4.68*d*	11.70*d*	195.00*dl*	325.00*dl*	.69	2.85
Seattle	112.95	.54*b*	.94*b*	....	....	150.00*e*	....	.80*ee*	2.40*ee*

‡ Delivered. *a* B. & S. class B and heavier. CL, Burlington, N. J. (base) $87.50. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $5 per ton additional. 30 in. and larger, usually $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* SS361-A. *e* 30 in. *g* Culvert pipe. Reinforced, ASTM C76–41. *h* Reinforced. ASTM C75–41. *i* Reinforced. ASTM C76–37. *j* Centrispun. *k* Per 100 ft. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13–40. *v* F.o.b. city. *x* 2 ft. lengths. *y* 3 ft. lengths. *z* CSA A 60–1941 specifications used. *aa* No standard specification in Can. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL, delivered, f.o.b. truck. *ee* 1% off for cash. * Not stocked, only made to order. *ff* 21" *g* Prices are published on Birmingham and Burlington bases where no published increases have been made yet.

*WROUGHT STEEL PIPE: (Full standard weight)

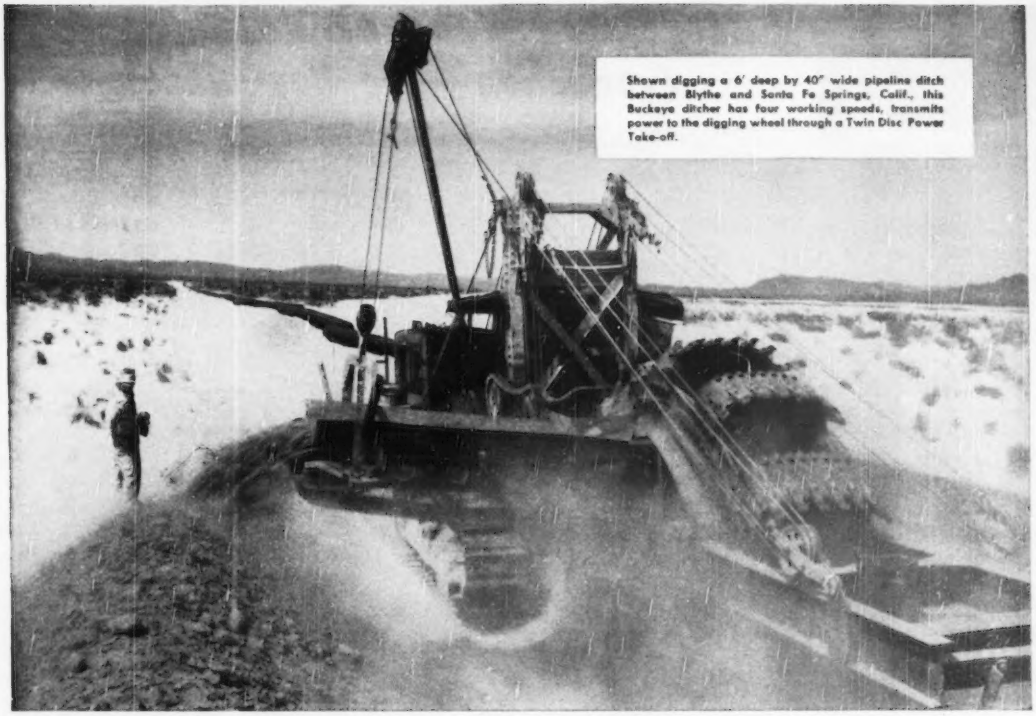
Mill	Butt Weld, Galv. %	Butt Weld, Black %	Lap Weld, Galv. %	Lap Weld, Black %	3½ to 6 in., Lap Weld‡	2½ & 3 in., Butt Weld‡	8 in.	10 in.	12 in.	
Lorain, Ohio	33.0	48.0	24.0	43.0	43.0*a*	29.0	30.0	42.0*e*	23.5*e*	24.5*a*
Aliquippa, Pa.	30.0	48.0	21.0	40.0	40.0*a*	30.0	30.0	40.0	21.5	23.5*eb*
Sparrows Pt., Md.	28.0	46.0	....	....	....	30.0	30.0	....	....	12.5*ab*
Benwood, W. Va.	....	....	....	48.0	48.0	29.0	30.0	....	....	24.5*a*
Youngstown, O.	....	....	....	48.0	48.0	30.0	30.0	....	....	23.5*eb*
Indiana Harbor, Ind.	....	....	....	47.0	47.0	29.0	30.0	....	....	12.5*ab*
Sharon, Pa.	....	....	....	48.0	48.0	29.0	30.0	43.0*a*	24.5*e*	24.5*a*
Wheatland, Pa.	....	....	....	48.0	48.0	30.0	30.0	42.0*eb*	23.5*e*	23.5*eb*
Etna, Pa	....	....	....	48.0	48.0	30.0	30.0	42.0*eb*	23.5*e*	12.5*ab*
Fontana, Calif.	....	....	....	37.0	37.0	19.0	19.0	31.0*ab*	12.5*ab*	5.0*ab*

a 3½ to 4 in. *b* Continuous weld. *e* 5 and 6 in. ‡ Threaded and coupled.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ⅛ in., 54¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. and 1¼ in. black, + 10.5, galv. + 33.0; 1½ in. black, 4.5, galv. + 29.5; 2 in. black, 4 galv. + 29.0. *Lap Weld* — 2½ in. to 3½ in. black + 11, galv. + 32.5; 4½ in. to 8 in. black + 8, galv. + 28.0. Freight rates to destination to be added to name delivered price.

(*Continued on page 85*)



Shown digging a 6' deep by 40" wide pipeline ditch between Blythe and Santa Fe Springs, Calif., this Buckeye ditcher has four working speeds, transmits power to the digging wheel through a Twin Disc Power Take-off.

Desert Ditching . . . Gritty Business

Watch the blades of this ditcher dig into the shifting desert surface—raising a cloud of powdered sand. That swirling cloud contains millions of gritty particles that give machinery the acid test every hour, every day on the job.

And one of the most vulnerable spots on any machine—whether it runs in the desert or in less severe surroundings—is the point where power must be transmitted from engine to driven parts. That's why so many leading manufacturers and users of heavy-duty equipment depend on Twin Disc Power Take-offs to deliver the power.

Twin Disc Power Take-offs, with 31 years of specialized power transmission experience built into them, combine a complete clutch power take-off assembly with shafts and bearings, mounted in a rigid, fully-enclosed cast iron housing. Bearings, shafts and all other parts are designed to insure maximum life under the severest operating conditions.

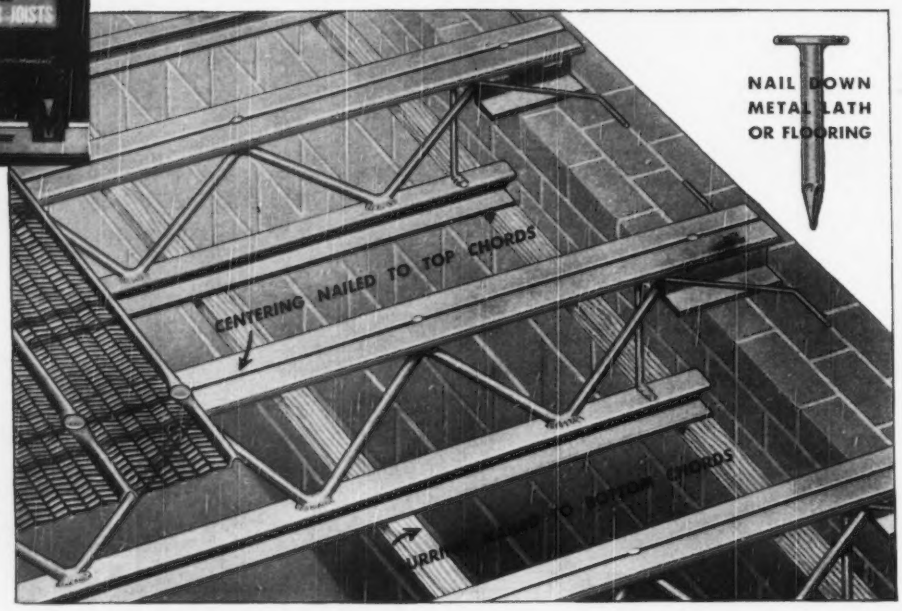
A good power link is easy to forget. Make sure that your construction equipment comes with a Twin Disc Power Take-off. For complete information on Twin Disc Power Take-offs and Reduction Gears, write for Bulletin 129-C. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Ill.).

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
REG. U. S. PAT. OFF.

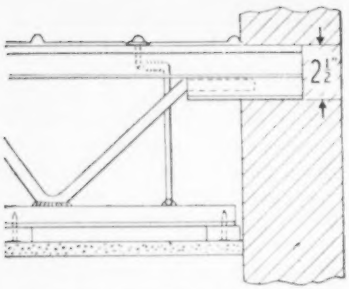
SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

Write For
Your Copy

After One Year of Volume Production — We Now Announce



THE MACOMBER DOUBLE V JOIST



Furring strips or Metal lath can be nailed directly to bottom chords with large head spiral nails.

To thousands of Architects, Engineers and Contractors who have specified and used Macomber Double V Joists this announcement will not be news. To all others it will be about the best news a builder can hear because Macomber Double V's safeguard profits. The patented Nailable Steel Section used in the top chord which grips nails 2½ times better than wood has been used in the bottom chord with the enthusiastic endorsement of structural engineers throughout the U. S. and many foreign countries.

All a builder has to do is to keep his costs on one job to discover how much faster nailing is than wiring and how much less concrete is used when lath is anchored instead of slipping into deep pockets of wasted concrete between joists. This joist requires no ceiling extensions. You SAVE time, labor and materials on every Double V installation. Write for Catalog.

STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER · INCORPORATED

CANTON, OHIO

IN CANADA, SARNIA BRIDGE CO., LIMITED, SARNIA, ONT.
IN MEXICO D. F.—MACOMBER DE MEXICO S. A. CEDRO 500

V BAR JOISTS • LONGSPANS • BOWSTRING TRUSSES • STEEL DECK

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face) **LONG LEAF Y. P.** **PLYWOOD**

All Fir boards, dimension, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. Merchantable grade up to 20 ft. Rail freight increment (See note for base *price*)

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	2x12 Rgh	12x12 Rgh	⅜"	¼"
Atlanta	† **$90.00**	**$79.00**	**$78.00**	**$80.00**	**$84.00**	**$88.00**	**$88.00**	.....	.....	.....	.....	$22.32	$27.24
Baltimore	* **110.00**	**111.00**	**85.00**	**85.00**	**85.00**	**95.00**	**95.00**	.....	.....	**$140.00**	**$143.00**	22.86	27.90
	105.50g	*108.50g*	*108.00g*	*108.00g*	*108.00g*	*107.00g*	*108.00g*	*$105.00*	*$105.00*				
Birmingham	† **83.00**	**85.00**	**63.00**	**71.00**	**77.00**	**85.00**	**85.00**	.....	.....	**115.00**	**125.00**	21.78	26.58
	80.00	*80.00*	*77.50*	*77.50*	*80.00*	*80.00*	*81.00*	*81.00*	*81.00*				
Boston	* **91.00**	**91.96**	**96.00**	**96.00**	**96.00**	**100.00**	.....	.....	.....	**124.00**	**124.00**	22.86	27.90
	† *118.00*	*100.00*	*115.00*	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*				
Chicago	**115.00	**120.00**	**106.00**	**117.00**	**117.00**	**119.00**	**120.00**	.....	.....	**160.00**	**160.00**	18.72	22.80
	114.00	*118.00*	*114.00*	*115.00*	*115.00*	*120.00*	*120.00*	*125.00*	*125.00*				
Cincinnati	* **113.50**	**114.18**	**125.00**	**113.96**	**113.96**	**126.72**	**138.60**	.....	.....	.....	.....	21.78	26.58
	122.60	*105.00*	*122.60*	*122.60*	*122.60*	*105.00*	*122.60*	*187.00*	*187.00*	.....	.....		
Cleveland	**115.00	**117.00**	**110.00**	**110.00**	**112.00**	**112.00**	*112.00*	*112.00*	*112.00*	.....	.....	22.20	27.12
Dallas	&† **63.00**	**70.00**	**61.00**	**53.00**	**56.00**	**57.00**	**90.00**	.....	.....	**86.00**	**88.00**	18.72	22.80
Denver	* *Not in stock*		*134.00*	*134.00*	*134.00*	*136.00*	*152.00*	*148.00*	*146.00*	.....	.....	13.92	16.98
Detroit	‡ **120.00**	**120.00**	**110.00**	**115.00**	**124.00**	**115.00**	.....	.....	.....	.....	.....	21.78	26.58
	103.50	*104.50*	*114.00*	*113.00*	*113.00*	*112.00*	*112.00*	*119.00*	*119.00*	.....	.....		
Kansas City	* **125.00**	**130.00**	**132.00**	**129.00**	**133.00**	**135.00**	.....	.....	.....	.....	.....	16.56	20.16
	119.00	*130.00*	*132.00*	*129.00*	*133.00*	*135.00*	*140.00*	*145.00*	*145.00*	.....	.....		
Los Angeles	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*121.00*	*136.00*	*121.00*	.....	.....	13.38*ab*	16.26*ab*
Minneapolis	*e 130.00*	*130.00*	*135.00*	*135.00*	*135.00*	*135.00*	*145.00*	*145.00*	*145.00*	.....	.....	16.56	20.16
Montreal	*ab* 75.00	85.00	73.50	75.60	85.00	90.00	.....	.....	.....	.....	.....	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	.....	*165.00*	.....	.....	.....	.....	.....
New Orleans	† **80.00**	**83.00**	**79.00**	**80.00**	**83.00**	**85.00**	**100.00**	.....	.....	**135.00**	**135.00**	18.72	22.80
	† *78.00*	*78.00*	*80.00*	*80.00*	*80.00*	*80.00*	*77.00*	*76.00*	*70.00*				
New York	‡ **120 130**	**125 135**	**115 125**	**120 130**	**125 135**	**130 140**	**135 150**	.....	.....	**210 240***f*	**210 240***f*	22.86	27.90
			Range from $125.00 to $135.00				*135 145*	*135 145*	*135 145*				
New York	**112.00	**115.00**	**90.00**	**110.00**	**112.00**	**115.00**	**120.00**	.....	.....	.....	.....	.....	.....
	120.00	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*	*125.00*	*125.00*	*125.00*	.....	.....	.....	.....
Philadelphia			**Range from $105.00 to $115.00**				**105 115**	.....	.....	**180 190**	**180 190**	22.86	27.90
			Range from $120.00 to $130.00				*120 130*	*130 140*	*130 140*				
Pittsburgh	†		**Range from $95.00 to $100.00**			**100 110**	**110 120**	**130 140**					
			Range from $100.00 to $110.00				*130 140*	*110 120*	*130 140*	.....	.....	.....	.....
St. Louis	†*e* **132.25**	**133.50**	**112.50***i*	**119.00***f*	**127.75***e*	**135.50**	.....	.....	.....	.....	.....	18.72	22.80
			157.25i	*145.50e*	*145.50e*	*146.50e*	*149.25e*	.....	*144.75*	.....	.....		
San Francisco	*A† 83.85*	*83.85*	*89.95*	*89.95*	*89.00*	.....	*80.85*	*80.85*	*80.85*	.....	.....	10.08*a*	12.30*a*
Seattle	† *90.00g*	*90.00g*	*90.00g*	*90.00g*	*90.00g*	*90.00g*	*90.00g*	*90.00g*	*90.00g*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. ‡ Retail, LCL, deliv. 2. Deliv. truck lots. 3. F.o.b. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8-12 ft. lengths. *e* 8-16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *h* 8 ft. lengths. *k* No. 3 common.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail $13.00 by truc. To yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅜", $187.00; on ½", $214.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum. * Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS — Discounts from jobbers list, Feb. 1, 1950*a* Single or Double Thickness A quality	B quality	EXPLOSIVES — Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	76%*e*	76%*e*	$0.2175
Baltimore	80-10%	82-10%	.2175
Birmingham	83%	83%	.1650
Boston	83%	83%	.2175
Chicago	81%	81%	.2175
Cincinnati	81%	81%	.2175
Cleveland	81-10-10%	81-10-10-10%	.2375
Dallas	75%	75%	.2250
Denver	83-5%	83-5%	.2225
Detroit	81-10-10%	81-10-10%	.2175
Kansas City	83-10-10%	83-10-10%	.2225
Los Angeles	56%	61%*f*	.22
Minneapolis	80-10%	80-10%	.2225
Montreal	40-5%*bc*	40-10-5%*bc*	18.15*hi*
New Orleans	83%	83%	.2225
New York	85%	85%	.37*g*
Philadelphia	80%	82%	.2175
Pittsburgh	82%	82%	.19
St. Louis	70-10%*e*	70-10%*e*	.2225
San Francisco	66%*e*	73%*e*	.2175
Seattle	52%*ce*	58%*e*	.22

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass: a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Sept. 1939; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *e* Discount from list of Jan. 16, 1946. *f* ss; ds—60%.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb, forcite 40%. Forcite 60%, $19.90. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C. L. 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me	$0.165	$0.1975	$0.2175
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.17 – .1775	.2025– .21	.2225– .23
Rocky Mtn. States	.17 – .1825	.2025– .21	.2225– .235
Pacific N. W. States	.1675– .18	.20 – .2125	.22 – .2325
Pacific S. W. States	.165 – .1725	.1975– .20	.2175– .2225

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	.....
12-in. — 2-ft. from butt	6-in.	50 to 59-ft.	.46	.....
12-in. — 2-ft. from butt	6-in.	60 to 69-ft.	.50	.....
12-in. — 2-ft. from butt	6-in.	90 to 100-ft.	.....	.79
13-in. — 3-ft. from butt	5-in.	91 to 100-ft.	.....	.80
14-in. — 2-ft. from butt	6-in.	50 to 69-ft.	.50	.87
14-in. — 2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in. — 2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in. — 2-ft. from butt	5-in.	85 to 89-ft.	.....	.83
14-in. — 2-ft. from butt	5-in.	90 to 100-ft.	.....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	.....	.....	.....	.....
	Pine	.....	.....	.....	.....
New York	S. L. Sap Pine	$1.65	$3.00	$2.25	$3.40
	Mixed Oak	2.00	3.20	2.50	3.70
Birmingham	Hardwood	1.00	1.60*a*	.....	2.25*a*
Chicago	Red Oak	.....	2.65/2.70*a*	.....	3.35/3.60*a*
Los Angeles	Douglas Fir	.....	.....	.....	.....
	Redwood	.....	.....	.....	.....
Philadelphia	Red Oak	2 15/2 33	3 10/3 13*a*	3 00/3 10	4 15/4 25*a*
St. Louis	White Oak	2.60		3.35	
	Red Oak	2.55	3.25*a*	3.30	4.20*a*
	Sap Pine or Cypress	3.10*a*		3.95	
San Francisco	Douglas Fir	1.28*e*	2.24*ef*	1.70*ef*	3.05*ef*
Montreal	Birch or Maple	*h*	*h*	*h*	*h*

Tr.—Treated; Untr.—Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$4.50
Chlorine cylinders, liquid, per lb. f.o.b. works	.08 – .12
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	22.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	1.80
Soda ash, 58%, in paper bags, per 100 lb, dense	1.35
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.50
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.10

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$25.00	$25.00	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	36.00*k*	41.00*k*	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	20.00*ff*	22.50*gg*	24.74	16.30	.....
Boston	149.00†	161.50†	298.00†	338.00†	.....	.....	32.00*k*	35.00*k*	32.30†	27.90†	.....
Chicago	115.00	122.50	230.00	.....	.....	.....	21.00	23.00	30.00	23.00	.....
Cincinnati	170.00*j*	180.00*j*	350.00*jdd*	278.00*j*	$355.00	$405.00	34.50*j*	44.25*j*	26.00*j*	24.25*j*	24.25
Cleveland	118.00*cc*	126.00*cc*	236.00*cc*	.....	.....	.....	30.00	30.00	25.50	23.50	29.90*ee*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	33.25	31.90	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	32.00	38.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	*116.65	124.40	233.25	.....	$289.65	$331.00	33.50*cc*	32.00*cc*	28.00	26.50	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	25.00*o*	37.50*o*	28.50*p*	22.50*p*	25.00*p*
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	29.00‡	.....	36.00	36.00	32.00
Minneapolis	165.00*p*	185.00*p*	377.00*p*	185.00*wp*	.....	.....	31.25*wp*	35.25	35.00*bbc*	26.00*bbc*	35.00*bbdle*
Montreal	143.00*uq*	157.00*uq*	292.00*uq*	.....	.....	.....	26.50	36.50	22.40*u*	.....	.....
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	38.00	26.00	37.50
New York	118.20*h*	126.00*h*	173.30*ch*	189.50*hn*	.....	.....	33.00	.....	34.40	26.80	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	29.00	32.00	31.00	19.50	24.50
Pittsburgh	112.00	117.00	180.00	216.00	279.00	317.00	28.00	35.00*y*	24.00	22.00	2.97*m*
St. Louis	120.00	135.00	180.00	252.00	339.00	.....	34.50*d*	32.50*d*	.85*uup*	.60*uup*	1.00*uuspec*
San Francisco	132.00*v*	148.50*v*	198.00*ldd*v*	148.50*vs*	.....	.....	33.00	.....	25.30	25.30	2.49*m*
Seattle	150.00*cc*	160.00*cc*	.....	160.00*ccw*	.....	.....	32.00*a*	39.00*a*	37.50*ahh*	37.50*ahh*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 12 in.-3 cell. *d* Pulverized hot. *e* 5% 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *u* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. ‡ F.o.b. plant. * All load-bearing, non-load-bearing no longer m'f'd in Detroit.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory— Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$17.00	$27.725	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	16.75	27.35	2.25	4.10	2.90	3.40	4.00	4.00	.42	36.00
Birmingham	17.00	27.725	3.90	3.40	.....	2.80	2.75	2.75	.....	40.50*ee*
Boston	16.75	27.35	.....	.....	.....	2.81*h*	2.53	2.81‡*q*	.38	42.00
Chicago	16.75	27.35	.....	.....	.....	2.57‡*u*	2.63‡*o*	2.63‡*o*	34.00‡*bbr*	38.00‡
Cincinnati	16.75	27.35	2.90	2.90	.....	2.28‡	2.28‡*o*	.....	.30*y*‡	.....
Cleveland	16.75	27.35	2.50*pqq*	2.75*qq*	2.35	2.35	2.40*o*	2.40*o*	.30*y*	33.00
Dallas	17.00	28.10	.....	4.05	.....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	17.25	27.85	2.82	4.50	2.63	3.20*o*	2.57*o*	2.57*o*	.41*ff*	40.00
Detroit	16.75	27.35	2.35	3.30	2.50	2.09	2.18*f*	2.18	.51	35.00
Kansas City	16.75	27.47	.....	2.46	.....	2.09	3.63	3.63	.283	43.20
Los Angeles	16.75	27.60	2.80	3.75	3.50	2.36	1.57*r*	*l*	.37	*l*
Minneapolis	16.75	27.47 28.55	.....	.....	.....	2.35*idd*	2.40*hidd*	2.40*hidd*	.336*idd*	36.00*r*
Montreal	.....	29.70	3.75*t*	4.20*t*	4.62*t*	3.25*t*	3.00*ff*	3.00*ff*	.79*t*	2.60*kkt*
New York	16.75	27.35	3.45*y*	.....	.....	2.35	2.40*o*	2.40*o*	.34*z*	36.00
Philadelphia	16.75	27.35	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.75	27.35	2.25	2.20	2.00	2.85	2.85*o*	2.85*o*	.37	40.00
St. Louis	16.75	27.35	.....	.....	.....	2.73	2.79*h*	2.79*h*	.43	40.00
San Francisco	16.75	27.60	1.80	2.75*n*	1.35	2.27	3.30*nn*	.....	.38	.....
Seattle	16.75	27.85	2.51*m*	2.67*m*	.....	3.26*mgc*	2.78*hmcc*	.....	.59*mcc*	48.75*jmc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. 80% minimum ferric oxide. *d* 15 lb. *f* Per 432 sq. ft. *h* Per roll, 65 lb. *k* Per roll. *l* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* May, 1941 price. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* ASTM Spec D266-41. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Brick-layers	Car-penters	Struct. Iron Workers	Hoisting Engineers	Plas-terers	Electrical Workers	Steam-fitters	Common Labor Building	Heavy Const.
Atlanta	$2.50	$1.85	$2.25	$2.125	$2.375	$2.25	$2.00	$1.00	$1.05
Baltimore	3.00	2.35	2.65	2.60 2.80	2.50	2.40	2.40	1.35	1.35
Birmingham	2.50	1.90	2.20	1.875	2.20	2.25	2.25	1.00	1.10
Boston	2.775	2.375	2.55	2.60	2.85	2.60	2.45	1.75	1.75
Chicago	2.625*k*	2.55	2.60	2.50	2.81*n*	2.71*n*	2.45	1.90*m*	1.90*m*
Cincinnati	2.70	2.25	2.425	1.675 2.675	2.50	2.55	2.55	1.65	1.65
Cleveland	2.70	2.70*c*	2.70	2.70	2.70	2.70	2.70	1.975	1.85
Dallas	2.50*t*	2.125	2.25	2.25	2.50*t*	2.375	2.375	1.075	1.275 1.50
Denver	3.00	2.35	2.20	2.30	2.50	2.50	2.40	1.45	1.45
Detroit	2.75	2.50	2.70	2.70	2.80	2.75	2.625	1.80	1.80
Kansas City	2.65	2.20	2.35	2.425	2.80	2.475	2.55	1.625	1.625
Los Angeles	2.75	2.20	2.50	2.15	3.125	2.50	2.50	1.65	1.65
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.41*n*	2.32	1.52	1.52
New Orleans	2.60	1.975	2.35	2.225	2.275	2.40	2.35	1.10	1.10
New York	3.348*bo*	3.09*bo*	3.348*o*	3.348*o*	3.398*on*	3.00*n*	3.28*p*	1.90	1.90
Philadelphia	3.31*t*	2.525	2.80*t*	2.50	3.1675*k*	2.875 3.125	2.8254	1.475	1.775
Pittsburgh	3.00	2.65	2.625	2.80	2.925	2.625	2.80	1.60	1.60
St. Louis	3.09*c*	2.50*h*	2.50	2.55	2.75	2.6775*c*	2.625	1.65	1.60/1.75
San Francisco	3.00*a*	2.375	2.50	2.19	3.00	2.625	2.50	1.55	1.55
Seattle	3.00	2.195	2.395	2.33	3.00	2.50	2.50	1.795	1.83
Montreal*	1.60	1.40	1.50	1.30	1.60	1.50	1.55	1.00	85

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *e* Includes 5c per hr. tool replacement. † Plus $5.00 daily bonus. *h* $2.20 hoines and housing + 5c vacation fund. *i* Incl. 2% welfare. *j* Incl. 9c/hr. welfare. *k* Incl.7½ c/hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5c/hr. welfare ins. fund. *n* Incl. 0c/hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund.

MEXICO CITY PRICES

In Pesos, F.o.b. City		July '50	Aug. '50
Common Wages—Building (8 hr. day)	av. per hr.	.53	.53
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.69	.69
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.88	1.88
Bricklayers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Steel Shapes 3"-15" x 12 meters	per ton	925.25	925.25
Reinf. Steel, Corr. Rods ¼" x 11 meters	per ton	1,010.00	1,010.00
⅜" x 11 meters	per ton	1,000.00	1,000.00
½" x 11 meters	per ton	990.00	990.00
⅝" x 11 meters	per ton	980.00	980.00
¾" x 11 meters	per ton	980.00	980.00
1" x 11 meters	per ton	980.00	980.00
Gravel truck load of 3½ cu. meters Blue Gravel	per tr. load	36.00	36.00
Rose Gravel	per tr. load	34.00	34.00
Cement, Std. Port. (Tolteca)	per ton	120.00	120.00
Lumber Mex. Sacred Fir (Oyamel)	per M ft.	600.00	600.00
1st Class Pine	per M ft.	880.00	880.00
2nd Class Pine	per M ft.	750.00	750.00

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.554. **ENR Common Average:** $1.561.

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VITRIFIED CLAY PIPE provides the only *sure* protection against costly, dangerous acid attack. "Inside and out," it's chemically inert — absolutely immune to corrosion, rust, or decomposition. In a recent survey of 122 leading American cities, it was found that 89% of the existing sewers are Vitrified Clay Pipe lines. *And there is not one instance on record of a single length of Clay Pipe wearing out due to acid attack.* It pays to play safe . . . to guard against the dangerous acids and alkalies found in sewage and ground waters. Be *sure* by specifying Vitrified Clay Pipe — the *only* pipe that never wears out.

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206 Connally Bldg., Atlanta 3, Ga.

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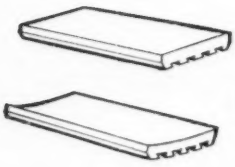
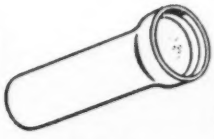
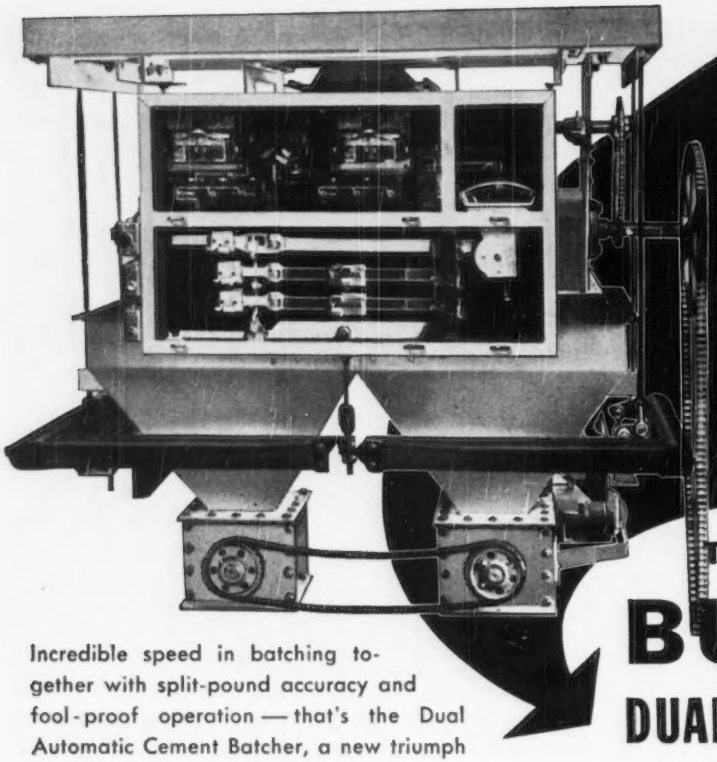


LINER PLATES



STANDARD-STRENGTH CLAY PIPE

CLAY PIPE FITTINGS



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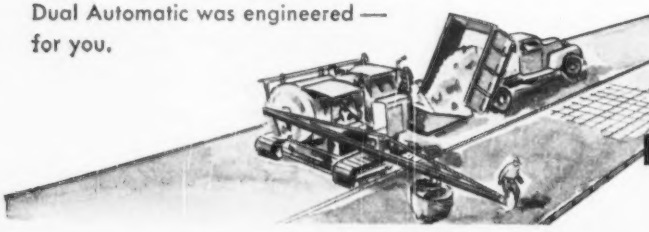

BUTLER BIN CO.

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WAUKESHA, WISCONSIN

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Oregon—B.A. 9/19—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., water distr. sys. extens., McNary Serial No. CIVENG-45-64-51-16. Col. W. Mills, distr. engr.

Tex., Houston—Bids Asked—Phillip G. Willard & Assoc., 3940 Main St., c.i. water lines and facilities. $35,000. Phillip G. Willard, 3940 Main St., engr., CD 8/21.

LOW BIDDERS

Pa., Hollidaysburg—General State Auth., 18 and Herr Sts., Harrisburg, Aug. 23, constr. water supply and distr. sys. at Hollidaysburg State Hospital incl. steel storage tank, from Frank Kukurian & Son Wilmerding, $187,813; incl. prestressed concrete tank, $204,838. CD 8/11.

Pa., Shippensburg—General State Auth., 18 & Herr Sts., Harrisburg, Aug. 23, constr. renewed water mains and fire hydrants at Shippensburg State Teachers College, from John F. Miles, Kulpmont. $55,000, est. $54,000.

Tex., Belton—City, August 15, 23,400 lin. ft. 6- to 8-in. pipe and fittings, etc. for water lines, from Samsco, 208 S. First St., Waco. $32,615. CD 8/7.

Tex., Midland—City, August 16, WW extensions in 3 areas, from M & N Constr. Co., Hobbs, New Mexico. $33,115.

Wash., Selah—City, City Hall, rejected bids Aug. 11, 500,000 gal. concrete reservoir. L. B. $38,912. CD 8/3.

CONTRACTS AWARDED

Tex., Kermit—City, pumping plant unit and c.i. mains, Own forces, $44,500 and $36,000 respectively. Fred Pearson, engr., City Hall.

† **Wash., Arlington**—Yards & Docks Annex, Navy Dpt., Arlington, Va., coolant and portable water-supply sys. at Jim Creek Naval Communication Station, to Blake Thompson Const. Co., Mount Vernon. $84,200. Bids 7/19 rejected. CD 7/26, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Tex., Houston—Bids Asked—Phillip G. Willard & Assocs., 3040 Main St., storm sewers, drainage, $50,000; sanitary sewers, $55,000. Philip G. Willard, 3940 Main St., engr.

LOW BIDDERS

Tex., Belton—City, August 15, approx. 25,000 lin. ft. 8 to 15 in. pipe and appurtenances, etc. for sanitary sewer lines, from Samsco, 208 S. First St., Waco, $54,500. CD 8/7.

Tex., Midland—City, August 16, sanitary sewer lines to 3 area, from M & N Constr. Co., Hobbs, N. M., $56,000.

Tex., Moulton—City, August 11, sanitary sewer lines, from W. L. Rea Constr. Co., Inc., Box 1192, Corpus Christi, $55,300. CD 8/9

CONTRACTS AWARDED

Mass., Quincy—City, City Hall, sewage treatment plant Nut Island, to Rich Bros., Constr. Co., 410 Park Sq. Bldg., Boston, $388,171.

BRIDGES

LOW BIDDERS

Alabama—State Hy. Dpt., Montgomery, Aug. 18, 6 Avenue Underpass Birmingham, Jefferson Co., from W. C. Howton Contg. Co. 3904 10 Ave. N., Birmingham, $564,550. CD 8/9.

CONTRACTS AWARDED

New York—Bureau Contracts & Accounts, Albany, Interstate Bridge and approaches over Delaware River at Cochecton, Sullivan Co., to Triple Cities Const. Co., 17 Tompkins St., Binghamton. $748,676. Bids 7/12. CD 7/14, under LB.

STREETS AND ROADS

BIDS ASKED

† **Alaska**—B.A. 9/30—Alaska Road Comn., Juneau, bit. 51.75 mi. Alaska Hy. sect. A, B1 from Big Delta to Sears Creek. H. A. Stoddart, div. engr. CD 8/17/45.

Tex., Houston—Bids Asked—Philip G. Willard & Assoc., 3040 Main St., street constr. and paving, $60,000, Philip G. Willard, 3940 Main St., engr.

LOW BIDDERS

† **California**—U. S. Eng., Wright Bldg., Sacramento, cancelled bids to have been opened Aug. 22, imprv. access road Gov't Housing Area, Isabella Proj. Spec. 1449, Kern Co. CD 7/31.

Colorado—State Hy. Dpt., 518 State Office Bldg., Denver, Aug. 18, grading, stabilization, surf. 8.985 mi. on State Hy. 131, between Yampa and Toponas, Colo. Proj. S 0121 (9), Routt Co., from Hunt Constr. Co., Steamboat Springs, $87,160, est. $97,979.

Idaho—State Hy. Dpt., Boise, rejected bids roadbed, drainage structures, road mix bit. 19.295 mi. Twin Buttes Hy. to provide shorter access to atomic reactor station site in Butte and Bingham Counties, L. B. $973,973, est. $732,241. CD 8/25, under LB.

Oregon—State Hy. Comn., State Office Bldg., Salem, received no bids Aug. 22, grading, surf. oiling 0.27 mi. on B St., Yoncalla, Douglas Co.; b. conc. footpath 1.85 mi. on Maxwell Rd.—Eugene Sect. of Junction—City—Eugene Secondary Hy., Lane Co. CD 8/15.

Wash., Tacoma—Pierce Co., Co. Courthouse, rejected bids, imprv. Collins Rd., L.B. $51,000. CD 8/23, under LB.

CONTRACTS AWARDED

Neb., Kearney—City, paving, to Ralph Green—W. L. Grosbeck, 1020 N. 14 St., Lincoln, $120,813. Harold Hoskins & Assocs., 231 N. 11 St., Lincoln, engrs. Bids 8/18.

Tex., Angleton—Dow Chemical Co., Freeport, constr. toe drain sys., to Tellepsen Constr. Co., 1710 Telephone Rd., Houston, $95,000. CD 8/21.

Tex., Paris—Lamar Co., Courthouse, farm to market road. Force account. $125,000. CD 5/24/49.

Tex., Pearsall—Frio Co., Courthouse, c/o Rd. Dist. 1, drainage, grading, surf. road imprv. Force account, $65,000. CD 1/3.

EARTHWORK, WATERWAYS

BIDS ASKED

Pennsylvania—B.A. 9/13—General State Auth., 18 & Herr Sts., Harrisburg, constr. Dam and lake on Hills Creek, Charleston Twp., Tioga Co. $300,000. Plans deposit $10. Frederick H. Dechant, 123 S. Broad St., Phila., engrs.

† **Oregon**—B.A. 9/15—Bureau Reclamation, Dpt. Interior, Bend, construct concrete checks, Station 2715 plus 39.5 and Station 2792 plus 45.5, North Unit Main Canal, Deschutes Proj. approx. 4 mi. south of Madras. Spec. No. R1-100.

Minn., Blue Earth—B.A. 9/26—Faribault Co., G. G. Busche, aud. Blue Earth, and Martin Co. H. E. Christianson, aud. Fairmont, Judicial Ditch 25 F & M, 46 lin. ft. 24 in. corrugated pipe outlet, 10 cu. yd. conc. apron and clay tile, $31,726.

† **Oregon**—B.A. 9/26—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., installing heating, ventilating, air-conditioning sys. in navigation lock control bldg. and on-overflow sect. at McNary Dam. CIVENG 45-164-51-15.

† **Arizona-California-Nevada** — B.A. 9/28 — Bureau Reclamation Dpt. Interior, Boulder City, Nev., installing turbines, transformer and appurtenant equip. for Units A3, A4 and A9; relocation of transformer bank "Y" and constr. addnl. transformer circuits and terminal facilities for Hoover switchyard at Hoover Power Plant, Boulder Canyon Proj. Spec. 3137. Michael W. Straus, comr. CD 9/12/44. adv ENR 8/31.

† **Oregon**—B.A. 9/28—U. S. Eng., 628 Pittock Block, Portland, Zone 5, clearing Areas F and G in the reservoir area 4½ mi. above Detroit Damsite, Area F lies on the south side of the North Santiam River and Area G lies on the north and west sides of Breitenbush River. Serial No. CIVENG 35-016-51-49.

† **South Carolina**—B.A. About 9/28—U. S. Eng., P. O. Box 905, Charleston, maintenance dredging Sampit River and Sampit River cutoff and turning basin, CIVENG 38-081-51-2.

† **Ohio**—B.A. About 10/2—U. S. Eng., Madison Ave. and 8th Street west, Huntington 18, W. Va., signal line for water level recorder for Burr Oak Dam, Burr Oak Reservoir Proj., east branch of Sunday Creek, Athens Co. Serial No. CIVENG 46-022-51-18.

▲ **Tex., Roma**—B.A. After 10/15—International Boundary & Water Comn., U. S. and Mexico projected Proj., 1st. Natl. Bank Bldg., El Paso, rolled earth type Falcon Dam Proj. 52 ft. high, 19,000 lin. ft. long, Approx. $50,000,000, electric power plant, $15,000,000. CD 10/31/46.

LOW BIDDERS

† **Oregon**—U. S. Eng., Pittock Block, Portland, Ore., Aug. 11, constr. stone breakwater in South Slough, tributary of Coos Bay for small boat harbor at Charleston, Coos Co., CIVENG -35-026-51-00, from Morgan Constr. Co., Florence $261,635, est. $241,200. CD 7/26.

† **Texas**—U. S. Eng., Foot of Prytania St., New Orleans, Zone 9, La., August 18, drainage structures, earthwork, incl. 134,000 cu. yd. semi-compacted earthwork on North and South Sulphur Levee, near Roxton, from W. C. Tucker & Son Constr. Co., Rte. 6, Box 181, Fort Worth, $64,719. CD 8/9.

Wash., Olympia—State Capitol Committee, Olympia, Unit No. 2 of Des Chutes Basin Proj. incl. 17,000 cu. yds. excavation, 442,000 cu. yds. common borrow for embankment, etc. for unpaved parkway roadway, from Thomas Scalzo Co., 3211 Airport Way, Seattle, Zone 4, $222,909, est. over $50,000. CD 8/3.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

AIRPORTS

BIDS ASKED

† **Alaska**—SANITARY SEWERS—B.A. 10/5—U. S. Eng., Anchorage, constr. sanitary sewers in Air Depot Area at Elmendorf Air Force Base, Inv. No. S95-507-51-6. Plans deposit $50.

LOW BIDDERS

† **Calif., Alameda**—CLAM SHELL DREDGING—U. S. Eng., 180 New Montgomery St., San Francisco, rejected bids July 25, clam shell dredging at Berthing Area Naval Air Station, Spec. 04-203-50-51. L. B. $45,780. CD 8/2, under LB.

CONTRACTS AWARDED

† **Fla., Cocoa**—BUILDINGS—U. S. Eng., P. O. Box 49701 Jacksonville, renovating, converting to new use 8 bldgs., Joint Long Range Proving Grounds, Eng 08-123-50-7, to Armour Contractors, 52½ St. Michael St., Mobile, 11, Ala. $302,843. Bids 7/6, awarded 8/4.

Mich., Grand Rapids—AIRPORT—State, Aeronautics Dpt., Lansing, reconstr. bldgs. at Kent County Airport, to E. J. Vander Veen Co., Grand Rapids, $53,830. CD 4/12/46.

Que., Baie Comeau—RUNWAY—Dpt. Transport, Ottawa, Ont., hard surf. runway, 150x4,000 ft. incl. clearing, stumping, grubbing, grading, concrete and asph. hard-surf constr. to North Shore Constr. Co., Ltd., 1410 Stanley St., Montreal. Approx. $250,000. Bids 7/14. CD 7/10.

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PUBLIC BUILDINGS

BIDS ASKED

▲ **Conn., Hartford**—HOUSING—B.A. 9/11—City of Hartford Housing Auth, 846 Asylum St., Hartford, 600 unit low-rent housing, Kensington St., $6,000,000. Kane, Fairchild, 49 Pearl St., archts. and Henri B. Van Zelm & Assoc., 17 Asylum St., engr. CD 4/18.

Ill., Red Bud—SCHOOL—B.A. 9/12—Bd. Educ., School Dist. No. 132, Red Bud, brick, concrete community high school. Plans deposit $25. S. T. Pabst & Assocs., Goldman Bldg., East St. Louis, archts. CD 4/9/46.

La., Denham Springs—SCHOOL—B.A. 9/12—Livingston Parish School Bd., high school. Plans deposit $25, Peyton & Bosworth, 502 Continental American Bank Bldg., Shreveport, archts. CD 3/4/49.

† **Mo., St. James**—DORMITORY—B.A. 9/12—Federal Soldiers Home and Samuel Marsh, dir. Dpt. P. Health and Welfare, Capitol, Jefferson City, constr. dormitory. Plans deposit $25. Gentry & Voskamp, 4 W. 13 St., Kansas City, Mo., archts.

▲ **N. Y., Amityville**—SCHOOL—B.A. 9/12—Bd. Educ., School Dist. No. 6, Memorial High School, $2,240,000. Extended date. CD 8/11.

Okla., Norman—EMPLOYEES DORMITORY—B.A. 9/12—Bd. of Affairs, Capitol, Oklahoma City, Zone 5, employees dormitory at Central State Hospital. $475,000. Plans deposit $60. Paul Harris, Chickasha, archt. CD 3/31.

Okla., Stillwater—CLASSROOM—B.A. 9/12—A & M College, Stillwater, classroom bldg. $700,000. Noftsger & Lawrence, 2736 N. W. 36 St., Zone 6, archts. CD 3/16.

Okla., Supply—EMPLOYEES DORMITORY—B.A. 9/12—Bd. of Affairs, Capitol, Oklahoma City, Zone 5, employees dormitory at Western Oklahoma State Hospital. $600,000. Plans deposit $50. W. T. Vahlberg, 1517 N. Broadway, archt. CD 3/31.

▲ **Ont., Toronto**—OFFICE, WAREHOUSE—B.A. 9/12—Mathers & Haldenby, archts., 15 St. Mary St., Toronto, 4 story 63x367 ft. office and 3 story 309x391 ft. warehouse, both rein.-con. on Fleet St. W., steel structural steel, piling, plumbing, heating, ventilating and electrical work) for Liquor Control Bd. of Ontario, 454 University Ave., Toronto. Approx. $2,000,000. CD 4/24.

Pa., State College—MECHANICAL ENGINEERING—B.A. 9/13—General State Auth., 18 and Herr Sts., Harrisburg, general constr.; heating, plumbing, electrical and elevators to construct 2 wings as adds. to the mechanical engineering bldg. at Pennsylvania State College. $929,600. Plans deposit $10 each. Altenhof & Brown, 210 Grant St., Pittsburgh, Zone 19, archts., A. F. Jones, c/o owner, ch. engr. CD 12/20.

Pa., Mansfield—DORMITORY, etc.—B.A. 9/13—General State Auth., 18 and Herr Sts., Harrisburg, general constr.; heating; plumbing; electrical men's dormitory at Mansfield State Teachers College. $299,000. CD 1/3; science bldg. $297,000. CD 12/21; Thomas K. Hendryx, Box 173, Bradford, archt., A. F. Jones, c/o owner, ch. engr.; kitchen bldg. $250,000. Henry I. Reese, The Pines, Coudersport, engr. Plans deposit $10 each. CD 4/25.

Tex., San Antonio—HEALTH EDUCATION—B.A. 9/13—San Antonio Union Junior College Dist., South Alamo St., 24,000 sq. ft. brick, hollow tile, steel frame health-education bldg., concrete slab fdn. $250,000. Phelps & De Week & Simmons, 1501 Majestic Bldg., archts., J. W. Beretta Engineers, Travis Bldg., engrs. Gerald Baker, Whitby Bldg., engr. CD 12/12.

Newfoundland, Grand Bank—B.A. 9/13—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., reconstr. harbor works. Approx. $250,000. Plans deposit $25. R. Blais, c/o owner, engr.

Ont., Cornwall—HOME FOR AGED—B.A. 9/13—United Counties of Stormont, Dundas and Glengarry, L. C. Kennedy, clk., Cornwall, steel, brick, concrete block walls home for aged. Plans deposit $50. H. H. Roberts, Westport, archt. CD 10/28.

Mich., Scottville—SCHOOL—B.A. 9/14—City, J. I. Falconer, sec., Bd. Educ., 2 story, bsmnt., brick, steel elementary school. $250,000. Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, archts. CD 9/6/46.

N. J., Secaucus—HOSPITAL ADDN.—B.A. 9/14, Bd. Chosen Freeholders, Hudson Co., County Courthouse, Jersey City, male wing addn., to Hospital for Mental Cases.

Pa., Glen Olden—SCHOOL—B.A. 9/14—Pub. School Building Auth., 1400 N. Cameron St., Harrisburg, general constr.; heating; plumbing; electrical for construction elementary school. Approx. $250,000. Plans deposit $25 general, $10 each others. Davis, Dunlap & Carver, 1717 Sansom St., Phila., Zone 3, archts. W. W. Behrens, c/o owner, ch. engr. CD 9/21/49.

Ga., Rome—HOUSING—B.A. About 9/15—Rome Housing Auth., Rome, 150 housing units. CD 10/27.

Idaho, Lewiston—DORMITORY—B.A. 9/15—State Bd. Educ., Boise, 2 and 4 story men's dormitory at Northern Idaho College of Education, $300,000. H. Richardson, Lewiston, archt.

N. C., Washington—HIGH SCHOOL—B.A. 9/15—City, Washington, 95,000 sq. ft. high school. Approx. $250,000. Plans deposit $25. Macklin & Stinson, Wachovia Bank Bldg., Winston-Salem, archts. CD 1/23/46.

Tex., Wharton—SCHOOL—B.A. 9/16—Wharton Independent School Dist., Wharton, school, gymnasium, auditorium, cafeteria, 18 classrooms. $350,000. Claude H. Lindsley, 5008 Almeda Rd., Houston, archt. CD 8/10.

Ind., Gary—POLICE HEADQUARTERS, COURTHOUSE—B.A. 9/19—Bd. P. Wks., Mayor Swartz chn., City Hall, 2 and 3 story irregular brick, stone rein.-con. structural steel police headquarters and courthouse, Broadway between 13 and 14 Sts., $725,000. Joe H. Wildermuth, 527 Broadway, Gary, archt. CD 3/31.

Tenn., Johnson City—DORMITORY—B.A. 9/19—State of Tennessee, at office W. R. Jarrell, State Purch. Agent, State Office Bldg., Nashville, girls dormitory for the East Tennessee State College. Plans deposit $25. Alfred H. Abernathy, E. Market and Legion Sts. archt.

Ala., Tuscaloosa—COMMERCE BLDG. ADDN.—B.A. 9/20—University of Alabama, Tuscaloosa, commerce bldg. adn. Plans deposit $25. Miller, Martin & Lewis, Title Guarantee Bldg., Birmingham, archts.

† **Colorado**—POWER PLANT—B.A. 9/20—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., constructing Pole Hill Power Plant and access road, Estes Park-Foothills power aqueduct, Colorado-Big Thompson Proj., approx. 14 mi. west of Loveland, Colo., Spec. 3155; adv. ENR 8/30.

Md., Oakland—SCHOOL—B.A. 9/20—Bd. Educ., Garrett Co., 2 story, brick, concrete block, steel Oakland Junior and Senior High School and North Region Junior and Senior High School at The Cove, $350,000. Plans deposit $100. Edw. H. Glidden, Mursey Bldg., Baltimore, Zone 2, archt. CD 2/16.

Pa., Nanticoke—LAUNDRY—B.A. 9/20—General State Auth., 18 & Herr St., Harrisburg, general construction, heating; plumbing; electrical for relocation of laundry and removal of old laundry bldg. at Nanticoke State Hospital, $100,000. Plans deposit $7.50 each contract. George P. McLane, 296 State St., Nanticoke, archt. A. F. Jones, c/o owner, ch. engr.

Pa., Somerset—DIETARY—B.A. 9/20—General State Auth., 18 & Herr Sts., Harrisburg general construction, heating, plumbing, electrical elevator dietary bldg. at Somerset State Hospital, $760,000. Plans deposit $15. each contract. Eric Wood, 209 W. Pitt St., Bedford, archt. A. F. Jones, c/o owner ch. engr. CD 9/29/49.

Minn., Minneapolis—BOILER UNIT—B.A. 9/21—University of Minnesota, R. S. Callaway, purch. agent, 323 Admin. Bldg., Main Campus, furnish and install boiler unit erected at Minneapolis Campus heating plant, $160,000. Plans deposit $20, Helmick, Edeskuty & Lutz, 405 Essex Bldg., engrs.

Pa., Hickory Twp.—SCHOOL—B.A. 9/21—Public School Building Auth., 1400 N. Cameron St., Harrisburg, general construction; heating; plumbing; electrical for elementary school for School Dist. of Hickory Twp., Approx. $250,000. Plans deposit $25, for general constr. $15, each of the others. Kling & Frost, 661 Wick Ave., Youngstown, O., archt., W. W. Behrens, c/o owner, ch. engr.

O., Montpelier—HOSPITAL—B.A. 9/21—Williams Co. Joint Township Hospital, Bd. Trustees, 1 story, bsmnt., irregular shaped, brick 42-bed hospital, $540,000. Britsch & Munger, Nicholas Bldg., Toledo, archts. Extended date. CD 6/20.

N. J., Lodi—HOUSING—B.A. 9/21—Housing Auth. of Lodi, DeVries Park Housing project, incl. 100-unit low-rental housing proj. on Union St. at corner of Brookside Ave. Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., archts. CD 6/27.

Pa., Farrell—HOUSING—B.A. 9/21—Housing Auth., Mercer Co., Mercer, 2 story bsmnt., 100 unit brick veneer housing proj. $750,000. Clepper & Mallorie, 72 Vine St., Sharon, archts.

▲ **Ia., Waterloo**—SCHOOL—B.A. 9/27—Bd. Educ. for Independent School Dist., c/o secy., 1 and 2 story 170x470 ft., rein.-con., steel, brick, stone junior high school, $1,000,000. M. B. Cleveland, Waterloo, archt. CD 8/3.

▲† **Ill., Lamont**—BIOLOGY UNIT—B.A. 10/3—U. S. Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash., D. C., 3 story, bsmnt., biology unit at Argonne National Laboratory, $1,250,000. Plans deposit $250.

▲ **N. C., Chapel Hill**—NURSES HOME, INTERNES QUARTERS—B.A. About 10/15—University of North Carolina, c/o Northup & O'Brien, archts., Reynolds Office Bldg., Winston-Salem, nurses home, $1,618,000; interns quarters, $610,000. CD 3/2/48.

LOW BIDDERS

† **Colorado**—SUBSTATION—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Aug. 15, constr. 115/69-kv Beaver creek substation, Colorado-Big Thompson Proj., Spec. 3126, from Sturgeon Electric Co., Inc. and Stapp Eng. Co., Tabor Bldg., Denver, $131,206, est. $156,641. CD 7/17.

Colo., Denver—SCHOOL—School Dist. No. 1, City and Denver Co. 414 14 St., Aug. 16, general contract 2 story 225x307 ft. rein.-con., brick, Edward L. Brown School from Mead & Mount Constr. Co., Denver National Bank Bldg., Denver, $544,000. est. over $250,000.

Conn., Storrs—STUDENT ACTIVITIES—State, R. S. Thatcher, comptroller, State Capitol, Hartford, Aug. 16, Student activities bldg., B/A-D-110, University of Connecticut, from A. E. Stephens Co., 2100 Main St., Springfield, Mass., $995,700. CD 6/26.

Ill., Lombard—SCHOOL—School Dist., 44, Grand Valley Dr. and Madison St., 2 story 57,500 sq. ft., steel, brick, concrete, stone, junior high school, from Henry B. Ryan & Co., 9 S. Clinton St., Chicago, Zone 6, $453,266. CD 8/9.

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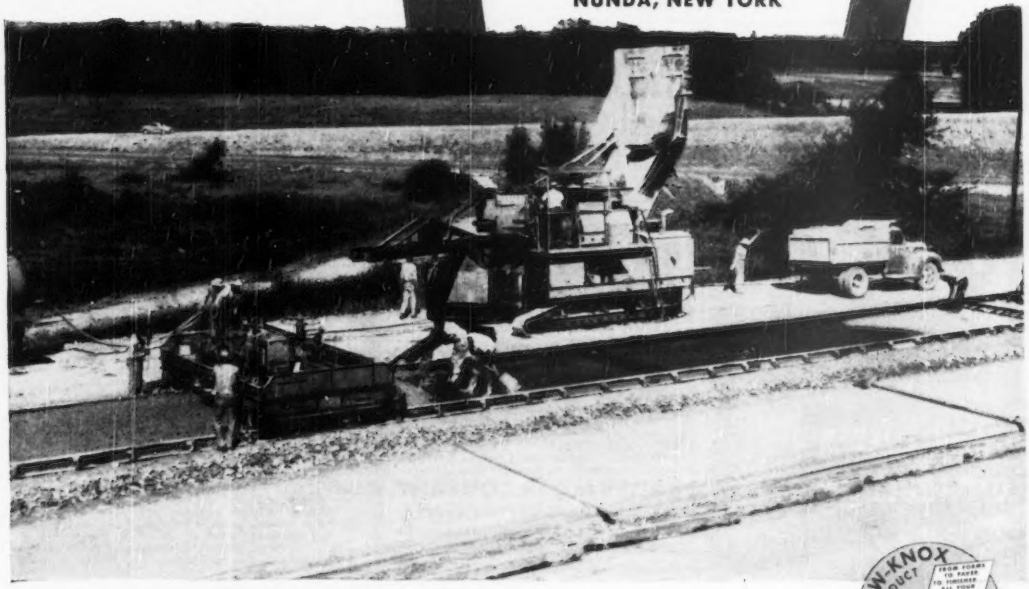

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Indiana

Pa., Allentown—DIETARY, etc.—General State Auth., 18 and Herr Sts., Harrisburg, Aug. 23, general contract, revamping of dietary facilities addns. and stores at Allentown State Hospital, from H. E. Stoudt & Son, S and Susquehanna Sts., Allentown, $386,351, est. $560,000. CD 7/31.

▲ Pa., Norristown—HOSPITAL BUILDINGS—General State Auth., 18 and Herr Sts., Harrisburg, Aug. 23, general contract, reconstr. Bldg. No. 12 for female working patients at Norristown State Hospital, from Wark & Co., 1700 Sansom St., Phila., $1,306,000; est. $1,700,000; CD 7/31. nurses home at Norristown State Hospital, from L. F. Driscoll Co., 18 W. Chelton St., Phila., $612,000, est. $658,000. CD 7/2.

▲ Wis., Milwaukee—HOUSING—Milwaukee Housing Auth., 844 N. Market St., Zone 2, Aug. 19, general contract, Westlawn Housing Proj. incl. 724 units, Proj. Wisc. 2-2, from Kroening Eng. Co., 4500 W. Mitchell St., Zone 14, $5,971,980***plumbing, from S. V. Hanley Co., 1653 N. Farwell Ave., Zone 11, $527,447***heating, from F. J. A. Christiansen Co. Inc., 2139 W. Purdue St., Zone 9, $334,690. CD 7/28.

CONTRACTS AWARDED

Calif., Madera—SCHOOL—Eastin-Arcola School Dist., Madera, 13-classroom wood frame, stucco school, to Harris Constr. Co., 264 Palm Ave., Fresno, $329,125. Bids 8/17, awarded 8/17. CD 7/21.

Colo., Denver—CITY AUDITORIUM—City and Denver Co., T. P. Campbell, mgr. of Improvts. and Parks, City and County Bldg., Denver, city auditorium (main arena and exhibition bldg.) superstructure, to Kirchhof Constr. Co., 700 Lawrence St., Denver, $446,590, est. over $250,000. Bids 8/16, awarded 8/17. CD 8/15/49.

Mass., Foxboro—SCHOOL—Town, Elementary School Bldg., Comm., Fred A. Maddocks, brick concrete elementary school addn., to Grande & Sons, Inc., 425 A Broadway, Everett, $604,945. CD 8/25.

Neb., Norfolk—HOSPITAL BLDG.—State Bd. Control, Lincoln, Aug. 22, general contract admin. and receiving bldg. at Norfolk State Hospital, to A. Borchman & Sons, 4601 Douglas St., Omaha, Nebr., $959,797, est. $1,250,000. CD 8/14.

Ore., Milton—Freewater—SCHOOL ADDNS.—Milton-Freewater School Dist., Freewater, Central School addns. at Milton and Freewater School addns. at Freewater to Leo. S. Wynans, 3585 N. E. Shaver St. Portland, $252,613, est. $300,000. Bids 8/21, awarded 8/21.

COMMERCIAL BUILDINGS

BIDS ASKED

Mich., Marshall—TELEPHONE EXCHANGE BUILDING—B.A. 9/11—Bell Telephone Co., 1365 Cass St., Detroit, brick, steel telephone exchange central bldg., Smith Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts.

P. A., Phila.—HOSPITAL—B.A. 9/11—Frankford Hospital, Frankford Ave. and Wakeling, hospital and alterations to present bldg. $900,000. Stopper & Lichty, 2112 Spruce St., archts. Axel Schulze, 10 S. 18 St., engr. CD 11/17.

Tex., Houston—BUSINESS CENTER—B.A. 9/12—Braeswood Building & Development Co., 2265 Bellaire Blvd., 1 story center and two 2 story wings, 50,000 sq. ft. structural steel, frame, masonry business or shopping center, concrete pier and beam fdn. $850,000. CD 8/18.

La., Alexandria—CLINIC—B.A. about 9/15—Jackson Street Corp., c/o Barron, Heinberg & Brocato, archts., Guaranty Bank Bldg., doctor's clinic, $250,000. CD 6/8.

Fla., St. Petersburg—CHURCH, etc.—B.A. 9/20—First Avenue Methodist Church, c/o Archie G. Parish & Robert B. Crowe, archts 213 Hall Bldg., church and chapel, Approx. $300,000. Plans deposit $100. CD 1/29/47.

▲ Ala., Phenix City—APARTMENTS—B.A. About 10/1 Riverview Court Apartments, c/o Lorin D. Gaines, 2442 Wynnton Rd., Columbus, Ga., 168-unit apartment addn., $1,680,000. CD 7/20.
Plans deposit $25. G. Brault, c/o owner, archt.

Ill., Chicago—APARTMENT—Bids Asked—Garden Beach Apartments, 5745 Sheridan Rd., 9 story, bsmnt., concrete brick 78-unit apartment bldg., $850,000. Ernest Made, 159 E. Chicago St., Zone 11, archt.

Ind., Hammond—APARTMENT—Bids Asked—Edison Apartment 650 169 St., 2 story 70,000 sq. ft., brick apartment, $310,000. Clyde D. Cook, 1108 Indiana St., archt.

Tex., Wichita Falls—HOTEL—Bids Asked—Marchman Hotel, Wichita Falls, 9 story hotel addn. $750,000. Turner-Killebrew, 903 Bluff St., archts. CD 7/17.

CONTRACTS AWARDED

Calif., Los Angeles—DWELLINGS—E. Steinkamp Inc., 612 N. Sepulveda Blvd., 36 stucco dwellings on Wilbur Ave., Vost and Hart Sts., Topeka Dr., Wystone Ave. Owner builds. $270,600.

Calif., Norwalk—DWELLINGS—Ed Krist, 900 S. Long Beach Blvd., Campton, 55 stucco dwellings on Fairford, Elmcroft, Wahenod Aves. and Foster Rd. Owner builds. $291,500.

▲ Calif., Rivera—DWELLINGS—Passons Bros. Park, 9521/2 S. Atlantic Blvd., Los Angeles, 159 frame, stucco dwellings, Burma Rd., Bennington Cord, Hostly Aves., Sengest Dr., Rex and Passons Blvds., to Arnold Constr. Co., 9521/2 S. Atlantic Blvd., Los Angeles. $1,076,740.

Ill., LaGrange—CHURCH—First Methodist Church, Ashland & Cossitt Sts., 1 story, steel, brick lannon stone church, to Julian Constr. Co., 2716 W. Giddings St., Chicago, Zone 25. $285,000. Herbert A. Brand, 400 W. Madison St., Chicago, Zone 6, archt. Awarded 8/12. CD 7/20. Bids 7/28.

▲ Md., Catonsville—SCHOOL—St. Timothy's School, St. Timothy's Lane, girls school, stone dwelling on site to be altered into dormitory on Trifold Farm in Greenspring Valley Section Baltimore Co., to Harry A. Hudgins, 15 E. 21 St., Baltimore. $1,000,000. Moore & Hutchins, 215 E. 37 St., New York, N. Y., archts., Henry Adams, Inc., 2315 St. Paul St., Baltimore, mech. engr. CD 2/14.

Tex., Dallas—DWELLINGS—Tom Lively, 3607 A. Greenville, fifty dwellings Gaston Park area, to Tom Lively Jr., 3607A Greenville. $340,000. CD 8/21.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ont., Hamilton—WAREHOUSE—B.A. 9/19—Riddle & Connor, archts., 422 Wellington St., London, 1 story 104x144 ft., masonry food warehouse, for Dominion Stores Ltd. 832 Old Weston Rd., Toronto, Approx. $175,000. CD 7/31.

Ind., Hammond — WAREHOUSE — Bids Asked — Libby, McNeill & Libby 165 and Columbia Sts., 75x700 ft., steel, concrete, brick warehouse, $250,000. S. F. Nyham, 36 S. State St., Chicago, Zone 4, engr.

Tex., Houston—BAKERY—Bids Asked—H & P Realty Co., 3029 Washington St., bakery. CD 8/21.

Mass., Roxbury—WAREHOUSE—F. W. Webb Mfg. Co., 1542 Columbus Ave., Boston, soon lets contract 1 story, 100x120 ft., concrete block, steel warehouse addn. Columbus Ave., $70,000. H. E. Davidson & Son, 66 Beacon St., Boston, archts. CD 5/9.

Mo., St. Louis—BUILDING—H. & H. Machine & Motors Parts Co., 4216 Easton Ave., Zone 13, soon lets contract, 2 story, brick, steel frame, 5,000 sq. ft. floor space bldg., Wischmeyer & Lorenz, 911 Locust St., Zone 1, archts.

LOW BIDDERS

N. D., Velva—STEAM GENERATING PLANT—Central Electric Power Co-operative, Minot, Aug. 4, superstructure for steam generating plant from Rue Contrg. Co., 1338 3 Ave. N., Fargo, $793,000. CD 11/23/49.

S. C., Moncks Corner—WAREHOUSE, OFFICE—Berkeley Electric Co-operative, Moncks Corner, Aug. 16, warehouse and office from Manor Const. Co. Inc., Commerce Ave., Columbia, $89,700. CD 8/8.

Tex., Mart — HEADQUARTERS — Mart Electric Co-operative, Inc., Mart, Aug. 15, REA headquarters bldg. from B. & R. Builders, Groesbeck, $70,450. est. $70,000. CD 8/7.

Tex., San Angelo—PLANT—San Angelo Standard Times, Inc., San Angelo, August 25, 2 story, bsmnt., masonry newspaper plant, from Warner Constr. Co., P. O. Box 1011, $219,591. CD 8/23.

CONTRACTS AWARDED

Calif., Bell Gardens—FACTORY—Baker Oil Tools Inc., 6000 S. Boyle Ave., Vernon factory, Owner builds, T. Rayen, 6000 S. Boyle Ave., Vernon, engr.

Ga., Columbus—PLANT ADDNS., etc.—Schwob Mfg. Co., c/o contractor, mfg. plant addns. and alterations, to J. P. Bradfield, Martin Bldg., $70,000. Bids 8/9 CD 8/8.

Ill., Chicago—PLANT—Columbia Pipe & Steel Co., 1120 W. Pershing St., Zone 9, 1 story, 17,000 sq. ft., steel, brick concrete plant addn., to Poirot Constr. Co., 2001 W. Pershing St., Chicago, Zone 9, $100,000. Awarded 8/14. A. Epstein & Sons Co., 2011 W. Pershing St., Zone 9, archts.

Ill., Chicago—FACTORY ADDN.—Illinois Paint Co., 1034 S. Kostner St., Zone 24, 1 story, bsmnt., 65,000 sq. ft. factory addn., to B-W Constr. Co., 39 S. LaSalle St, Chicago, Zone 3, $360,000. Awarded 8/21. Bids 8/12. CD 8/8.

Ill., Chicago—FACTORY, etc.—Martin-Senour Co., 3217 W. 48 Place, Zone 32, 44,000 sq. ft. factory and warehouse, to Poirot Constr. Co., 2001 W. Pershing St., Chicago, Zone 9, $260,000. A. Epstein & Sons Co., 2011 W. Pershing St., Zone 9, archts. Awarded 8/14.

Ill., Chicago—PLANT—Pure Carbonic Co., 1918 S. Lumber St., Zone 5, brick, concrete dry ice plant, silos, sewers railroad trackage, to Abell-Howe Co., 53 W. Jackson St., Chicago, Zone 4, $300,000. Bids 8/20. awarded 8/10. CD 8/14.

Ill., Chicago—FACTORY, etc.—Stephen F. Whitman & Son, 4315 S. Kildare St., Zone 32, 15,000 sq. ft. steel, brick, concrete factory and office, to Heidel & Beck 6235 S. Michigan St., Chicago, Zone 37, $100,000. A. Epstein & Son Co., 2011 W. Pershing St., Zone 9, archts. Awarded 8/15.

Kan., Kansas City—FREIGHT TERMINAL BUILDING—Chicago Rock Island and Pacific R. R. Co. W. B. Throckmorton, ch. engr., Lasalle St. Station, Chicago, Ill., 2 story, bsmnt., steel, concrete, brick, freight terminal bldg., and offices, to Interstate Constr. Co., 3621 Troost, Kansas City, Mo., $600,000. Awarded 8/8.

Kan., Welda—COMPRESSOR UNIT—Cities Service Gas Co., First National Bldg., Oklahoma City, Zone 1, Okla., constr. 3000 hp compressor unit addn. and appurtenant facilities at North Welda. Own forces, $600,000, R. T. Wells, ch. engr. c/o owner. CD 8/9.

La., New Orleans—PLANT—Jones & Laughlin Steel Barrel Co., c/o contractor, mfg. plant, to Hogan Bros., 236 Focis St., $70,000.

Md., Baltimore — PLANT — Arcadia Investment Corp., 1511 Guilford Ave., 1 story, 180x330x14 ft., steel, masonry mattress mfg. plant, to Baltimore Contractors, Inc., 711 S. Central Ave., $125,000.

Mo., Moberly—REPAIR SHOPS—Wabash R. R. Co., J. C. Bousfield, ch. engr. Railway Exchange Bldg., 611 Olive St., St. Louis, Zone 1, diesel service and repair shops, owner builds. $85,000. CD 6/26.

Mo., St. Louis—FACTORY—General Metals Products Co., 3883 Devor St., Zone 16, 1 story, 127x240 ft., brick, conc. fdn., factory addn., to Gamble Constr. Co., 804 Pine St., Zone 1, $110,000, Fred R. Neauman, 714 N. Woodlawn, Kirkwood, Zone 22, archt.

Mo., St. Louis—GARAGE—Gulf Transport Co., 1429 N. 18 St., Zone 6, 1 story, 75x80 ft., brick, concrete bus garage at 411 S. 15 St., to Juengel Constr. Co., 201 Worthington Bldg., Affton, Zone 23.

Mo., St. Louis—GARAGE ADDNS.—Union Electric Co. of Missouri, 314 N. 12 Blvd., Zone 1, 1 story, 17x49 ft. paint shop, 1 story, 20x50 ft. wash track addn., incl. 27x202 ft. office addn. to garage bldg., to J. S. Alberici Constr. Co., 1550 Irving Ave., Zone 20, $76,863. CD 2/10/47.

N. C., High Point—MILL—High Point Weaving Mill, c/o contractor, mill addn. to Brooks Lumber Co., Greensboro. Approx. $200,000.

Ore., Eugene—BAKERY—Davidson Baking Co., 700 N. E. 22 St., Portland, 106x291 ft. rein.-con. bakery to W. H. Shields Co., 252 Taylor St., $240,000. Bids 7/25. CD 7/20.

UNCLASSIFIED

BIDS ASKED

South Dakota—RURAL DISTRIBUTION LINES—B.A. 9/16—West River Electric Assn., Wall, 140 mi. rural distr. lines, Pennington Co. $150,000. D. O. Flahart, Rapid City, engr. CD 5/25.

Tex., Hemphill—STREET LIGHTING—B.A. 10/1—City, Hemphill, street lighting and industrial power line extens. and imprvs. $100,000. Garrett Eng. Co., 5008 Almeda Rd., Houston, engr. CD 8/18.

B. C., Masseet—SEAPLANE LANDING—B.A. 9/13—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., seaplane landing. Approx. $35,000. Plans deposit $20. R. Blais, c/o owner, engr.

† N. Y., Bath—CEMETERY EXPANSION—B.A. 9/19—Veterans Admin., Vermont Ave. between H & I Sts. N.W., Washington 25, D. C., cemetery expansion for Veterans Admin. Center, Spec. No. 50144, Proj. 31-5169.

LOW BIDDERS

Ala., Camp Rucker—RAILROAD TRACKS—U. S. Eng., Post Bldg., Mobile, Ala., reconstr., extending railroad tracks from John W. Gibson, East Brewton, and C. N. Mason, 3025 W. Blount St., Pensacola, $139,642.

Calif., Santa Monica—SWIMMING POOL—City School Dist. 1333 6 St. rejected bids Aug. 10. swimming pool at Santa Monica High School, $130,000. CD 8/17, under LB.

† Idaho, Arco—CIRCUIT BREAKERS, etc.—U. S. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, oil circuit breakers and spare parts, from General Electric Co., River Rd., Schenectady, N. Y., $132,450.

Missouri—RURAL DISTRIBUTION LINES—Central Missouri Electric Co-operative, Leland M. LaVelle, mgr., 112 E. 5 St., Sedalia, August 15, 141 mi. single-phase rural distr. lines, and 41 mi. conversion lines in Pettis Co. and vicinity, from James H. Drew Corp., P. O. Box 227, Sedalia and Architects & Builders Bldg., Indianapolis, Ind., $231,719. CD 8/8. .

† Nebraska—GATES, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Aug. 15, high-pressure gates with four 173,000 lb. hydraulic hoists; two 15,000 lb. semi-automatic gate hangers, 2 hydraulic gate hangers with parts for mechanical indicators and with 2 single-throw mercury switches and two 1¾ in. standard shoulder eyebolts for spillway river outlets, Trenton Dam, Frenchman-Cambridge Div., Missouri River Basin Proj., Spec. 3121, from Hardie-Tynes Mfg. Co., 800 N. 28 St., Birmingham, Ala., $53,425. CD 7/12.

† Ore., Clatskanie—AMMUNITION DEPOT—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., Beaver Point ammunition storage depot imprvs. from Sound Const. Co., 1200 Aloha St., Seattle, Wash., $733,894. est. $483,540.

CONTRACTS AWARDED

† Calif., Lompoc — REHABILITATE RAILROAD — U. S. Eng., 751 E. Figueroa St., Los Angeles, rehabilitate railroad at Camp Cooke, Eng. 04-353-51-10, to Morrison-Knudsen Co., 411 W. 5 St., Los Angeles, $244,769. Bids 8/17, awarded 8/17.

Ind., Fort Wayne—DRIVE-IN THEATER—East 30 Drive-In Theater Inc., c/o James E. Kelley, of Kelley's Flying Service, Wayne Tr. Fort Wayne, drive-in theater on 40-acre site 2 mi. east of city on U. S. 30, general contract to P. J. Crislip Rock Creek, O.; drainage and excavation to O. G. Davis, Madison, O. and sewage to Barney Massa, 327 W. Berry St., Fort Wayne, Approx. $75,000.

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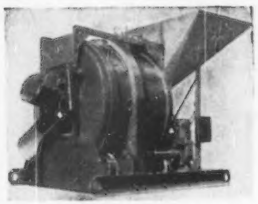

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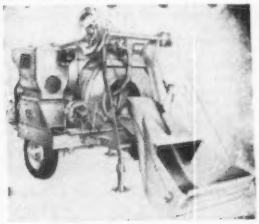

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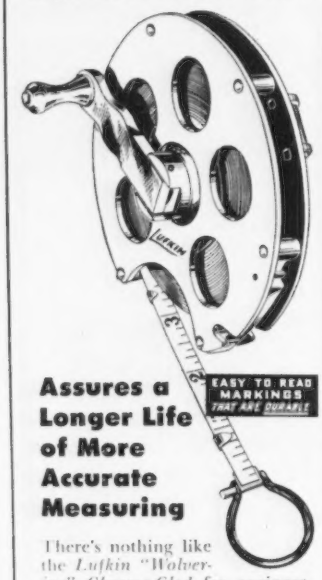

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Mo., Fredericktown—DRIVE IN THEATRE—L. A. Mercier, c/o Mercier Theatre, Fredericktown, 350 car drive in motion picture theatre on Rte. 67 near city, owner builds, $50,000.

Mo., St. Louis Co.—DRIVE IN THEATRE—Ronnie's Enterprises, Inc., c/o Paul Krueger, co. gen. mgr., Fred Wehrenberg Circuit, Cinderella Theatre Bldg., 2725 Cherokee St., St. Louis, Zone 18, 750 car drive in motion picture theatre on 27 acre site at Lemay Ferry and Buckley Rds., St. Louis Co. about 2 mi. south of Lemay, to William H. Mills & Son, 8032 Forsyth Blvd., Clayton, St. Louis, Zone 24, $150,000. William H. Mills, 8032 Forsyth Blvd., Clayton, St. Louis, Zone 24, engr. CD 7/21.

† Ore., Clatskanie—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., imprv. Beaver Point ammunition storage depot, to Sound Constr. Co., 1300 Aloha St., Seattle, Wash., $733,894, est. $483,540. CD 8/24, under L8.

Tenn., Etowah—GAS SYSTEM—City, Etowah, natural gas sys. to R. P. Scott Contrg. Co., Volunteer Bldg., Chattanooga, $202,813.

Tenn., Murfreesboro—SWIMMING POOL—State of Tennessee, Nashville, swimming pool at Middle Tennessee State College to Polston & Robertson, Lafayette, $102,000. Bids 8/11. CD 7/31.

PROPOSED PROJECTS

WATER SUPPLY

▲ Que., Quebec City—City, F. X. Chouinard, city clk., new 42-in. water mains 7 mi. long between water intake at Chateau de 'Eau and city. Approx. $3,100,000. J. A. Tremblay, c/o owner, engr. G. Demers, 71 St. Peter St., Quebec City, engr. CD 1/7/48.

SEWERS, WASTE DISPOSAL

Calif., Costa Mesa—Costa Mesa Sanitary Dist., Costa Mesa voted $850,000 bonds sanitary sewers. Francis H. Bulot, 411 W. 5 St., Los Angeles, engrs.

Calif., Santa Monica—City Council, 1685 Main St., 300 ton incinerator. $500,000. Maurice M. King, city engr.

▲ Mass., Holyoke—City, P. Wks. Dpt., City Hall, sewage treatment plant contemplated, $2,143,000.

Mo., St. Louis—City, c/o Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, Zone 3, and Missouri State Hy. Comn., C. W. Brown, State Hy. Bldg., Jefferson City, ch. engr., sewers along Carroll St. from Mississippi River to proposed Third St. Expressway near 9 St., along Expressway from Carroll St. to Emmet St., etc., $840,000, Horner & Shifrin, Shell Bldg., 1221 Locust St., Zone 8, consult. engrs., Guy Brown, Dpt. Streets and Sewers, 325 City Hall, 12 and Market Sts., Zone 3, ch. engr. CD 7/31.

Okla., Collinsville—City, Collinsville, sanitary sewer extens. $110,000. Wood & Craig, Philtower Bldg., Tulsa, consult. engrs. CD 6/21/45.

▲ R. I., East Providence—Town, Sewer Comn., Milton H. Irons, ch., East Providence sewage disposal plant, at Riverside sect., revamp plant at Fort Hill sect. $2,600,000. Charles A. Maguire & Assoc., 1015 Turks Head Bldg., Providence, engrs.

S. C., Charleston—City, City Hall, drainage sys. imprvs. throughout city. The John McCrady Co., 9 State St., consult. engr. CD 8/11/44.

Tex., Haltom City—City, J. C. Gunter, mayor, Haltom City, sanitary sewer collection sys. and sewage treatment plant, $670,000. Joe J. Rady, 811 Insurance Bldg., Fort Worth, consult. engr.

BRIDGES

Tex., Beaumont—City, voted bonds Aug. 12, 12 underpasses and overpasses. $750,000.

STREETS AND ROADS

Fla., Bartow—City, Bartow, general street imprvt. $500,000. Russell & Axon, Dayton Beach, consult. engrs.

Ill., Chicago—City, City Hall, Zone 2, paving Archer Ave. from Ashland to Central Park Aves. $550,000. Dpt. Streets & Lighting, J. F. Ward, purch. ag. CD 4/25/45.

Ill., Monticello—City, blacktopping unimproved streets $172,320. CD 7/12/45.

Oklahoma—State Hy. Dpt., Oklahoma City.

Murray Co.—C. conc. paving 8 mi. from Davis to Sulphur, $610,000. S. K. McClelland, Oklahoma City, state engr.

▲ Tex., Beaumont—City, voted bonds Aug. 12, elimination downtown grade crossings, $1,000,000; opening, wid'n., developing paving streets and thoroughfares, $800,000. R. C. Black, Beaumont, city engr. CD 7/20.

EARTHWORK, WATERWAYS

Calif., Los Angeles—Los Angeles County Flood Control Dist., 751 S. Figueroa St., channelize San Jose Creek 209,000 cu. yd. excav., 114,000 cu. yd. fill, $100,000.

Tex., Beaumont—City, voted bonds Aug. 12, filling Neches River Turning Basin to provide traffic outlets. $500,0000. R. C. Black, Beaumont, city engr. CD 7/21.

AMERICANS ABROAD

Greece—State Electric Utility Co., Greek Government, Athens, plans underway nation wide public utility system, incl. 68,000 kw. thermal plant at Alviveri, on Island of Euboea; 40,000 kw. hydro-electric plant at Agra, on the Vadas River; 5,000 kw. hydro-electric plant at Louros, near St George Springs; 50,000 kw. hydro-electric plant on Ladhon River, near Pidima Bridge; 650 mi. of 150,000 volt. transmission circuits, 3,000- 4,000 mi. 15,000 volt primary distribution lines; 10,000 mi. secondary distribution lines; 25 sub-stations. $85,000,000. Walter Burke c/o owner will direct construction, instalation and operation of project. Ebasco Services, Inc., 2 Rector St., New York, N. Y., U.S.A. will act as general manager for owner. Contractor for thermal plant will be selected in September. CD 2/8.

PUBLIC BUILDINGS

Ark., Magnolia—HOUSING—Chas. S. Wilkins, chn. Housing Auth., Magnolia, 100 unit housing. Approx. $600,000.

Calif., Madera—SCHOOLS—Madera School Dist., 124 E. Yosemite Ave., plans by Chas. D. James, Box 357, Madera, elementary school $320,000; junior high school, $650,000. CD 2/2/48.

▲ Calif., Oakland—HOUSING—Housing Auth. of City of Oakland, plans by Edward D. Cerrutti, 1440 Broadway, Confer & Willis, 366 40 St., Irwin M. Johnson, 449 W. MacArthur Blvd.; Ralph E. Wastell, 1440 Broadway and Beals, Bidwell & Macky 1444 Webster St., Oakland, three housing units to contain 1000 units, $12,000,000. CD 2/20/45.

▲ Calif., Sacramento—HOUSING—Housing Auth. of Sacramento, City Hall, plans by Harry J. Devine, Herbert E. Goodpastor and Barravetto, & Thomas, 1012 Jay St., Sacramento 400-unit housing project. $4,000,000.

▲ Calif., San Bernardino—SCHOOLS—City High School Dist., plans by Walter L. Culver Anderson Bldg., Perris Hill High School, $1,426,690; plans by Howard E. Jones, 370 17 St., Miscoy Junior High School, $308,639; plans by E. Charles Parke, 1582 N. E. St., San Bernardino High School addn., $716,027; plans by William F. Mellin, 671 D St., West End Junior High School, $423,214; plans by De Witt Mitcham, 856 E St., Highland Junior High School addn., $268,989. CD 3/28.

▲ Calif., San Diego—JUVENILE HALL—Bd. Supervs., San Diego Co., Civic Center, $1,000,000 bond election in November. juvenile hall.

▲ Calif., Santa Monica—SCHOOL FACILITIES—Santa Monica School Dist., 1333 6 St., bond election $4,890,000 Oct. 17 school facilities.

▲ Conn., Essex—SCHOOL—Regional High Schools Comn., c/o Raymond Abbey, Regional Bd., plans by Ernest A. Sibley, 7 S. Main St., West Hartford, regional high school, $1,000,000. CD 7/21/47.

Conn., New Haven—City, Bd. Educ., City Hall, plans by Leo. F. Caproni, 1221 Chapel St., New Haven, Winchester School, Gregory St., $900,000. CD 5/20/48.

Conn., Watertown—SCHOOL ADDN.—Town, Bd. Educ., plans by Carl Malmfeldt & Assoc., 36 Pearl St., Hartford, 3 story brick concrete school addn., Hemmingway Park. $580,000. CD 2/18/47.

Ill., Coal Valley—HOSPITAL—Rock Island Co., Rock Island, bond election Nov. 7, constr. Rock Island Co. Convalescent Hospital wing. $750,000.

▲ Ind., New Albany—HOUSING—New Albany Housing Auth., Rantline Rd., plans by Hawkins & Walker, 218 Elsby Bldg., 400 family housing, Bond Rd. and Griffin St. $2,900,000.

Kan., Plainville—SCHOOL—Bd. Educ., Plainville, plans by Glenn Benedict, Farmers & Bankers Bldg., Wichita, high school, $600,000. CD 7/14.

Ky., Stanford—HOSPITAL—Lincoln Co. Fiscal Court, Court House, plans by Otis & Grimes, 312 Tyler Bldg., Louisville, hospital, $500,000. Bond election in November.

Md., Baltimore—HEALTH—City, Bureau Bldg., Constr., 410 Municipal Bldg., Zone 2, plans by Hal A. Miller & Assoc., 2218 Maryland Ave., Zone 18, 3 story, masonry Southern Health Dist. Bldg., Bank St. School Bldg. between Conkling St. and Highland Ave., $500,000, R. E. L. Williams, 410 Municipal Bldg., constr. engr.

Md., Baltimore—SCHOOL—Baltimore Co. Bd. Educ., Susquehanna and Wash Aves., Towson, plans by Henry Powell Hopkins, 10 E. Mulberry St., 12 classroom Maiden Choice School, near here. $500,000.

Md., Baltimore—SCHOOL—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, plans by David Harrison, 421 St. Paul Pl., brick, block concrete, steel, limestone School 18 addn., Druid Park Dr. between Liberty Heights and Park Heights Ave., new wing on existing bldg. $375,000, Van Resselaer Saxe, 100 W. Monument St., struct. engr. Egli & Gompf, Inc., 1019 N. Calvert St., mech. engr. R. E. L. Williams, 410 Municipal Bldg., Zone 2, bldg. constr. engr.

Md., Catonsville—COTTAGES—State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 1, plans by Jamison & Marcks, 8 E. Mulberry St., Baltimore, four 2 story, brick, stone convalescent cottages, Spring Grove

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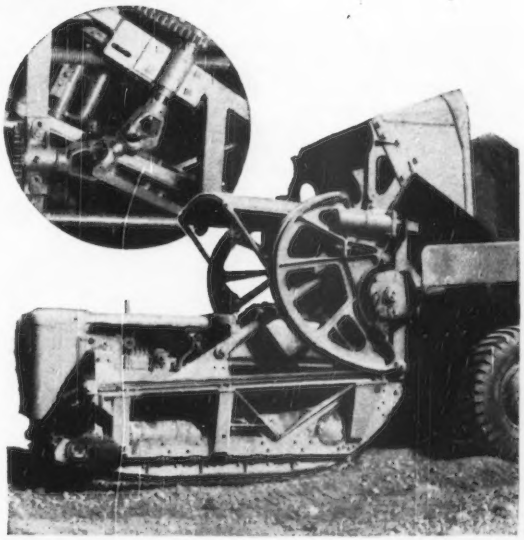

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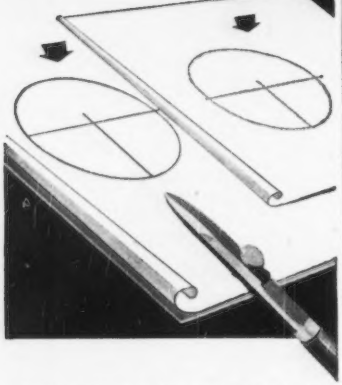

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▲ **Md., Crownsville**—COTTAGES—State Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 1, plans by Jamison & Marcks, 8 E. Mulberry St., Baltimore, Zone 2, six 2 story cottages, part bsmnt., brick, stone, Crownsville State Hospital. $1,200,000. J. L. Faisant & Assoc., 2017 Maryland Ave., Baltimore, Zone 18, struct. engr. Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, Zone 2, mech. engr. John B. Funk, 506 Park Ave., Baltimore, Zone 1, ch. engr.

Md., Towson—SCHOOL—Baltimore Co., Bd. Educ., plans by Tyler, Ketcham & Myers, 513 Park Ave., brick, stone, concrete, steel 12 classroom Westowne School, 8 to 10 additional classrooms, Westowne. $500,000. Van Rensselaer Saxe, 100 W. Monument St., Baltimore, struct. engr. Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, mech. engr.

Mass., Amherst — DORMITORY — University of Mass. Alumini Bldg. Assoc., Alden C. Breck, plans by Louis Ross, 131 State St., Boston, 4 story, bsmnt., brick, concrete men's dormitory. $800,000.

▲ **Mass., Lynn**—HOUSING—City, Housing Auth., John Cavanaugh, chn., 58 Andrews St., plans by Abbott Assoc., 131 State St., Boston, housing project, $3,000,000.

Mass., Taunton—NURSES HOME—Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton Pl., Boston, plans by Roger Garland, 340 Main St., Worcester, 3 story, 130x142 ft., brick, concrete, steel, L-shaped Nurses Home Camp Miles Standish, $500,000, John S. Bilzerian & Lester Edwards, 340 Main St., Worcester, assoc. archts.

▲ **Mich., Ionia**—HOSPITAL—State, A. N. Langius, dir. bldg., State Admin. Dpt., State Office Bldg., Lansing, plans by H. E. Beyster Corp., 2100 Industrial Bldg., Detroit, brick, steel tuberculosis bldg. for women, geniatric bldg. and power plant at Ionia State Hospital, $1,250,000.

Minn., Moorhead—COURT HOUSE—Clay Co., W. D. Johnson, aud., election Nov. 7, to vote authorization constr. 3 story, bsmnt., 50x180 ft. court house with 2 story, 40x50 ft. wing. $600,000. Foss & Co., Moorhead, archts. CD 7/17/47.

Minn., St. Paul—LIBRARY—University of Minnesota, R. S. Callaway, purch. agt., 323 Administration Bldg., Main Campus, Minneapolis, plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, 2 story, bsmnt. sub-bsmnt., brick, stone library in Buford St., St. Paul Campus, $540,000.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., 49 Flatbush Ave. exten. Zone, 3 story P. S. 251 school, 1025-1117 E. 54 St. $1,213,400. Eric Kebbon, c/o owner, engr.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, Carver Houses, site bounded by 99 St., 106 St., Madison and Park Aves. $18,410,000. Fred N. Severud, 415 Lexington Ave., Zone 17, structural engr.; Syska & Hennessey, Inc., 144 E. 39 St., Zone 16, mechanical engr., Clark & Rapuano, 145 E. 32 St., Zone 16, landscape archts. CD 3/2.

▲ **O., Akron**—SCHOOLS—Bd. Educ., 70 N. Broadway, $13,465,000 bond election November 7, 7 new schools, field house, athletic field, $400,000; remodel existing bldgs. CD 12/13/44.

O., Barberton—CITY—City, $50,000 bond election Nov. 7, city bldg. CD 4/10.

▲ **O., Boardman**—SCHOOL—Bd. Educ., Boardman, $1,000,000 bond election November 7, elementary school. CD 8/17.

▲ **O., Columbus**—HIGH SCHOOL—Marion Twp. Bd. Educ., Columbus, $1,500,000 bond election November 7, high school bldg. and elementary school imprvs.

Okla., Norman—EDUCATION BLDG.—Univ. of Oklahoma, Norman, plans by Paul Harris, Chickasha, graduate education bldg. $600,000.

▲ **R. I., Pawtucket**—HOUSING—City, c/o Frank Crook, vice chn. Housing Auth., Pawtucket, 225 unit low rent housing proj. $2,000,000.

▲ † **S. C., Charleston**—LABORATORY—Dpt. of Army, Quartermaster Corp., Wash., D. C., research laboratory near here. $12,000,000.

▲ **Tex., Houston**—ENGINEERING BLDG.—University of Houston, 3801 St. Bernard St., plans by Alfred C. Finn, Bankers Mortgage Bldg., engineering bldg. $4,000,000. CD 3/23/45.

Tex., Rockport—SCHOOLS—Aransas Independent School Dist., Rockport, defeated bonds Aug. 12, high school, $325,000; school bldg. repairs, converting high school into Junior High and elementary, $250,000. (Correction status). CD 8/18.

Tex., San Antonio—HOME FOR AGED—City, City Hall, Military Plaza and Bexar Co., Courthouse, $170,000 bond election September 16, old folks home addn. and repairing. $250,000. Ralph H. Cameron, 1710 Transit Tower, consult. archt.

Tex., San Marco—San Marco's Housing Auth., San Marcos, plans rental housing, $950,000. Paul G. Bentley Co., Burt Bldg., Dallas, consult. engr.

Va., Lexington—INSTITUTE—Virginia Military Institute, Lexington, science hall at Virginia Military Institute, $500,000.

Wis., Milwaukee—SCHOOL—Bd. Educ., 101 S. Military Rd., plans by T. J. Stepnoski & Son, 104 S. Main St., school. $546,000.

▲ **Sask., Saskatoon**—CITY HALL—Municipality, city hall. $1,250,000.

COMMERCIAL BUILDINGS

▲ **Calif., Newport Beach**—HOSPITAL—Hodg Memorial Hospital Presbyterian c/o H. C. Chambers & Lester Hibbard, 124 W. 4 St., Los Angeles, 75 bed hospital at Newport Blvd. and Highway 101, Approx. $1,000,000. CD 12/6/45.

▲ **Del., Wilmington**—CHURCH, etc.—Roman Catholic Wilmington Diocese 414 W. 28 St., plans by Gleeson & Mulrooney, Fox Bldg., Phila., Pa., school, church, convent and rectory, $1,000,000.

▲ **Ill., Elmhurst**—TELEPHONE EXCHANGE—Illinois Bell Telephone Co., 212 W. Washington St., plans by Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, telephone exchange, Virginia and York Sts. $1,500,000.

Mass., Roxbury—HOSPITAL—Jewish Memorial Hospital, 45 Townsend St., plans by Herman L. Feer and Wm. E. East, 27 School St., Boston, hospital addn. $600,000.

▲ **N. J., Flemington**—HOSPITAL, MEDICAL CENTER—The Hunterdon Medical Center, c/o Vincent G. Kling, archt., 917 Corinthian Ave., Phila., Pa., hospital and medical center. $2,000,000. CD 5/24.

▲ **N. Y., Astoria**—APARTMENTS—Queensview Housing Enterprises, Inc., c/o George Brown & Bernard Guenther, archts., 1860 Broadway, New York, Zone 23, 14 story apartment, south side of 33 Rd., east of 21 St. $500,000; 14 story apartment, north side of 34 Ave., east of 21 St. $500,000.

N. Y., Brooklyn—APARTMENT—150 West End Avenue Corp., 447 Tenth Ave., New York, Zone 1, plans by Joshua Tabatchnik, 16 Court St., Zone 2, 6 story apartment, 136-54 West End Ave. $500,000.

N. Y., Brooklyn—BUILDING—Hillel Foundation, Inc., Brooklyn College Chapter, 1520 Flatbush Ave., Zone 10, plans by Harrison & Abramovitz, 45 Rockefeller Plaza, New York, Zone 20, building for Organizational Activities at Germania Pl. and Amersfort Pl. $400,000.

N. Y., Jackson Heights—APARTMENT—Juno Realty Corp., c/o Philip Birnbaum, archt., 12 E. 48 St., New York, Zone 17, 6 story apartment on south side of 35 Ave. between 80 and 81 Sts. $750,000.

▲ **N. Y., Jackson Heights**—APARTMENT—Somerset-Wilshire Apartments, c/o Philip Birnbaum, archt., 12 E. 48 St., New York, Zone 17, 6 story apartment on south side of 34 Ave. between 74 and 75 Sts. $1,125,000.

▲ **N. Y., New York**—APARTMENT—Bennett Gardens, Inc., 1351 Boscobel Ave., plans by H. Herbert Lilien, 201 W. 72 St., Zone 23, apartment at 143-53 Bennett Ave. $1,000,000.

N. Y., New York—APARTMENT—Fairo Realty Corp., 9 W. Tremont Ave., Zone 53, plans by H. Herbert Lilien, 201 W. 72 St., Zone 3, 6 story apartment, Fairfield Ave., northeast corner of 232 St. $350,000.

N. Y., New York—HOSPITAL—Mount Sinai Hospital, 11 E. 110 St., plans by Kahn & Jacobs, 2 Park Ave., Zone 16, hospital alterations at 1179-80 Fifth Ave. $250,000.

▲ **N. Y., New York**—APARTMENT—Primrose Rose Assoc., 570 Seventh Ave., Zone 18, plans by Horace Ginsbern Assoc., 205 E. 42 St., Zone 17, 6 story apartment 699-717 West End Ave. from 94 to 95 Sts. $1,000,000.

N. Y., New York—CONVENT—Roman Catholic Church of the Good Shepherd, 608 Isham St., New York, Zone 34, plans by Paul C. Reilly, 111 Fifth Ave., New York, Zone 3, convent at 620 Isham St., $300,000.

N. Y., New York—APARTMENT—Stanco Realty Corp., 101 W. 31 St., Zone 1, plans by George Fred Pelham, 19 W. 44 St., Zone 18, apartment alterations at 630 Park Ave. $300,000.

▲ **N. Y., New York**—OFFICE—Syndicate, c/o Emery Roth & Sons, archts., 18 E. 48 St., Zone 17, 15 story office at northeast corner of Broadway and 41 St. $2,165,836.

N. Y., Seaford—SCHOOL—Church of St. William, The Abbot, Seaford, plans by LaFarge, Knox & Murphy, 251 E. 61 St., New York, Zone 21, school. $350,000.

O., Youngstown—COMMUNITY CENTER—Jewish Federation, 646 Bryson St., community center, Wick Ave. across from Youngstown College, $550,000.

▲ **Pa., Dormont**—APARTMENTS—Bel-Air Apartments, Inc., c/o Stevenson Williams Co., 666 Washington Rd., Mt. Lebanon, Pittsburgh, Zone 16, plans by Arthur Tennyson, 666 Washington Rd., Pittsburgh, Zone 16, four 3 and 6 story, bsmnt brick concrete garden type apartments, Dormont Ave. $8,000,000.

▲ **Pa., Phila.**—SHOPPING CENTER—St. Joseph's College 54 St. and City Line, shopping center. $1,000,000.

▲ **Tenn., Memphis**—HIGH SCHOOL—St. Agnes Academy, c/o Marr & Holman, Stahlman Bldg., Nashville, high school. $1,000,000. CD 4/5.

Tex., Amarillo—RESIDENCES—Troy Jones, Amarillo, 42 frame residences, concrete slab fdn. $290,000.

Tex., Bellaire—DWELLINGS—Thos. W. Menefee, Bellaire, 88 masonry dwellings off Post Oak Rd. $1,150,000.

▲ **Tex., Bellaire**—DWELLINGS—Pabst Co., 510 Sikes St., Houston, 82 masonry type dwellings, off Post Oak Rd., $1,000,000.

Tex., Bellaire—DWELLINGS—Taylor Building Co., 401 Jensen Dr., 75 frame and masonry dwellings off Post Oak Rd. $900,000.

Tex., Dallas—RESIDENCES—Henry Heyn, 2116 N. Field St., 50 frame residences, concrete slab fdn. $350,000.

▲ **Tex., Dallas**—HOTEL—Statler Hotels, 7 Ave. and 23 St., New York, N. Y., plans by John W. Root of Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Ill., 800-room rein.-con. hotel, $10,000,000. CD 6/23.

Tex., Houston—BUSINESS CENTER—Braeswood Building & Development Co., 2265 Bellaire Bldg., plans by Dixon & Greenwood, 2265 Bellaire Bldg., 58,000 sq. ft. business center, Braeswood area, $750,000.

▲ **Tex., Houston**—OFFICE, etc.—Prudential Insurance Co. of America, Scanlan Bldg., plans by Kenneth Franzheim, 2306 Crawford St., 18 story bsmnt. office, $6,000,000-$7,500,000; 800 capacity auto carport and asph. paved parking area. $250,000. Dale S. Cooper & Assoc., 420 Sul Ross St., mechanical engrs; Ward Butterick, 2306 Crawford St., structural engr. CD 4/7.

Tex., Texas City—HOTEL—The Hotel Construction Co., Texas. City, plans by J. R. Tabor & Assoc., Union Natl. Bank Bldg., Houston, 7 story rein.-con. frame, brick on hollow tile walls hotel. $900,000.

Utah, Salt Lake City—SUPER MARKET—M. Warshaw, 24 E. 9th South St., plans by Clifford Evans, Zions Saving Bank Bldg., super market. $500,000.

▲ **Wis., Milwaukee**—SHOPPING CENTER—Froedtert Enterprises, Inc., Kurtis R. Froedtert & Assoc., 810 N. Plankington Ave., Zone 3, plans by Grasshold & Johnson, 734 N. Jefferson St., Zone 2, shopping center to be known as Westgate. $10,000,000.

INDUSTRIAL BUILDINGS

Ariz., Tucson—PLANT—Infilco, Inc., 325 W. 25 Pl., Chicago, Ill., 50,000 sq. ft. plant, $500,000.

▲ **Fla., Bunnell**—PLANT—Lehigh Portland Cement Co., Lehigh, Pa., portland cement plant, Approx. $4,000,-000.

Fla., Jacksonville—BUS TERMINAL—Southeastern Greyhound Bus lines 204 W. Bay St., bus terminal at present location of the Atlantic Hotel and Gate City Storage Garages at foot of Hogan St., $500,000.

▲ **Ga., Newnan**—GENERATING UNIT—Georgia Power Co., 75 Marietta St. N.W., Atlanta, third unit, 100,000 kilowatt generating units at Plant Yates, $10,000,0:0.

La., New Orleans—WAREHOUSE—Western Electric Co., Inc., 195 Broadway, New York, N. Y., warehouse, $950,000, J. F. Ruth, c/o owner, consult. engr.

Tex., Houston—STORAGE—Ford Motor Co., 5800 Clinton Dr., storage for parts and accessories. $500,000. S. G. Van Arsdell & Arthur V. Allison, c/o owner, 856 Penobscot Bldg., Detroit, Mich., engr.

▲ **Tex., Houston**—CHEMICAL PLANT—Ethyl Corp., National Standard Bldg., addnl. chemical plant mfg. units. $13,500,000.

▲ **Tex., Houston**—PLANT—Ethyl Corporation, National Standard Bldg., tetra-ethyl lead, $1,750,000; ethyln chloride, $1,250,000; sodium and chlorine, $1,500,000; misc. chemicals units, $1,000,000 in Ship Channel.

▲ **B. C., Duncan Bay, Vancouver Island**—PLANT—Elk Falls Company Ltd., c/o Pacific Mills Ltd., north foot of Campbell Ave., Vancouver, pulp and paper plant. $35,000,000-$40,000,000.

UNCLASSIFIED

Conn., Hartford—PARK—City of Hartford, c/o city mgr 550 Main St., Hartford, monumental entrance to Bushnell Park at Mulberry St. by pass for traffic from Memorial Arch on Trinity St. to Jewel St., widen. Jewell and Ford Sts., $200,000. Irving H. Skilton, 550 Main St., Hartford, engr. CD 10/12/44.

▲ **Idaho, Mountain Home**—DAM etc.—Idaho Power Co., 1220 Idaho St., Boise, 120 ft. high earth dam across Snake River with concrete spillways and power house with 3 30,000 kv. generators. $18,500,000.

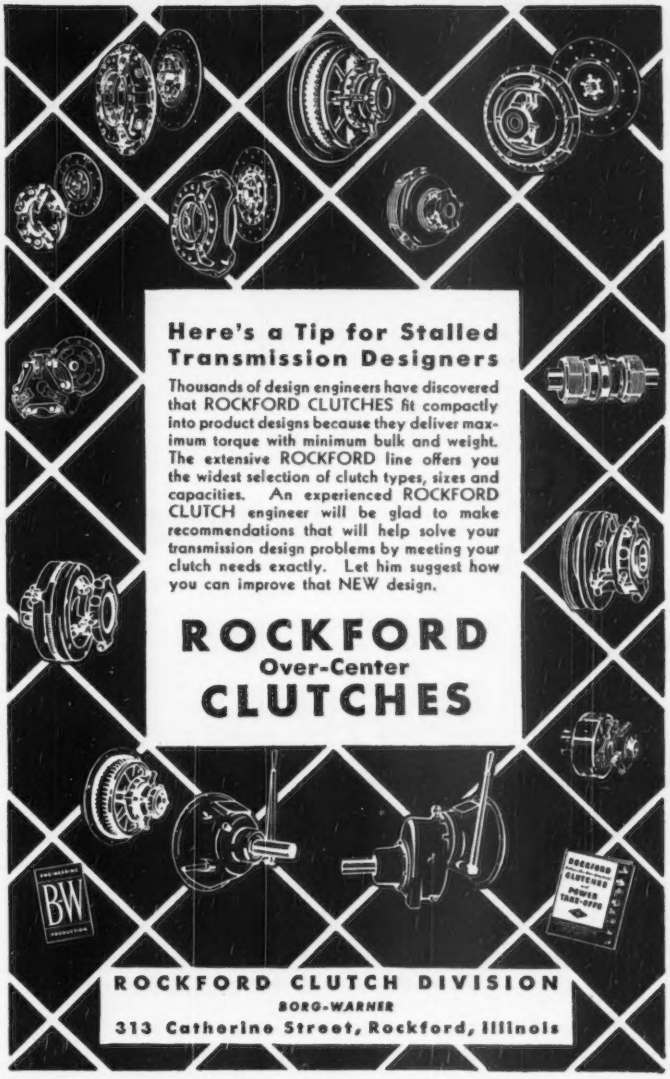
▲ **Mich., Muskegon**—PLAYGROUND—City, L. Charles Walker, chn., Playfield Constr. Bd., playground, $1,000,000. CD 11/16/44.

▲ **Tex., Beaumont**—RAILWAY, etc.—City, voted bonds Aug. 12, relocating SP Railway mid-town yards to an outlying dist. $500,000; combination M. P. Ry. and SP Ry. tracks in Central Beaumont on an elevated track overpassing entire town, $750,000; relocating main KCS Railway tracks and yards and removing all tracks from Railroad Ave., $500,000. R. C. Black, Beaumont, city engr. CD 7/20.

Tex., Kerrville—RECREATIONAL CAMP—Texas Lions League for Crippled Children, c/o G. S. McCreless, 1102 Fair Ave., San Antonio, recreational camp, incl. swimming pool, 5 bunk houses, craft shop, utilities, etc., on 504 acre site, $500,000.

Man., Winnipeg—SPORTS STADIUM—Bd. School Trustees, Winnipeg, 10,000 seating sports stadium on Notre Dame Ave., baseball diamond, running track, bleechers and parking space, $244,000. W. A. Martin, City Hall, city engr.

▲ **Ont., Niagara**—WEIRS, etc.—Govt. of Canada, associated with U. S. A., Hunter Bldg., Ottawa, Ont., constr. weirs and shearing-off shelves near the brink of both the American Falls and the larger Canadian Horseshoe Falls, $1,000,000. International Joint Comm., Ottawa, Ont. and Washington, engrs.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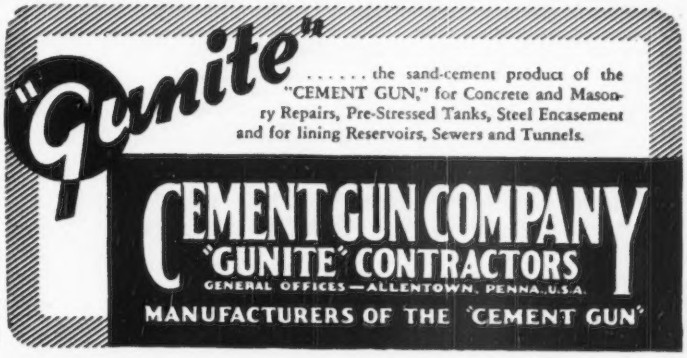
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WATER SUPPLY

BIDS ASKED

Tex., Shamrock—B.A. 9/15—City, water works, incl. 11,000 ft. 6 and 8 in. vitr. tile pipe. $32,000. Plans deposit $25. Geo. W. Thompson, 512 W. Kingsmill, Pampa, engrs.

LOW BIDDERS

▲ **Calif., San Francisco**—Public Utilities Comn., City Hall, Aug. 22, 14.4 mi. San Joaquin Pipe Line 2, Sect. A, Hetch Hetchy Contract 230, from P & J Artukovich, 13305 S. San Pedro St., Los Angeles, $3,375,288. CD 8/2.

Del., Seaford—Good Hope Manor, 121 N. Broad St., Phila., Pa., water mains, from Wm. C. Fray, Cedar Lane, Norfolk, Va. $43,140. Clarke Gardner & Assocs., 109 Calvert St., Salisbury, Md., engrs.

O., Celina—Village, Celina, Aug. 23, water treatment and softening plant from Mid State Const. Co., 1001 E. Berry St., Fort Wayne, Ind. Approx. $400,000. CD 7/24.

Tex., Hughes Springs—City, August 18, ww. incl. well, pumping station, reservoir, from H. D. Gilis, Rte. 1, Box 215, Mineral Wells. $75,215. CD 8/11.

CONTRACTS AWARDED

Calif., South Gate—City Council, 8650 California St., 500,000 gal. elevated water tank, to Chicago Bridge & Iron Co., 608 S. Hill St., Los Angeles. $164,870. Bids 6/26, awarded 8/21. CD 7/24, under LB.

Miss., Meridian—City, 8 MGD water treatment plant, to Sullivan, Long & Hagerty, 800 Fourth Ave., N., Birmingham, Ala. $565,052. Bids 8/22. CD 8/15.

O., Bowling Green—Village, Bowling Green, water lines, 21,610 lin. ft. 4, 6, 8, 12 in. c.i. pipe to Johnson & Co., 50 Broadway, Toledo. $90,604. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs. Bids 8/6. Awarded 8/16.

Tex., Seguin—City, c.i. water lines. Owners handle. $30,000. CD 2/28.

Utah, Salt Lake City—City, c/o Irma Bitner, Rcdr, City and County Bldg., watermain extens., approx. 30,000 ft. 24 to 36 in. c.i. pipe 8th West St. from 1st. North St. to South Temple; 7th West St. from South Temple to 13 South St.; 13 South St. from 7th West St. to 3rd East St. to United Concrete Pipe Corp., 419 W. Arrow Hy., Baldwin Park, Calif. $374,316. Bids 8/15. CD 8/21.

SEWERS, WASTE DISPOSAL

BIDS ASKED

O., Maumee—B.A. 9/11—Village, Maumee, sewer extens., inc. 22,300 lin. ft. 6, 8, 10 and 12 in. vitrified or concrete sewer pipe. $160,000. Plans deposit $10. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs. CD 8/21.

Pa., Phila.—B.A. 9/12—Dpt. Pub. Wks., City Hall Annex, storm relief sewer, G St. Approx. $150,000. A. Zane Hoffman, c/o owner, ch. engr. CD 3/1/46.

Miss., Jackson—B.A. 9/13—City, c/o city engr., outfall sewer proj. 118.5, 119.5, 120.5, and 117.5. Plans deposit $15 each project. CD 8/11.

Minn., Biwabik—B.A. 9/15—City, N. Riley Jr., clk., constr. sewage disposal plant; $125,000. Plans deposit $25. E. F. Johnson, Virginia, engr.

Tex., Shamrock—B.A. 9/15—City, sanitary sewer system incl. disposal plant, imhoff tank, sludge beds, 18,000 ft. 6- to 10-in. mains. $65,000. Plans deposit $25. Geo. W. Thompson, 512 W. Kingsmill, Pampa, engrs.

Calif., Inyokern—B.A. 9/18—Inyokern Sanitation Dist., Courthouse, sewer mains and appurtenances. $54,245. R. E. White, 1716 Oak St., Bakersfield, engr.

Pa., Phila.—B.A. 9/18—Dpt. Pub. Wks., City Hall Annex, storm relief sewer and appurtenances, Wingohocking St. Approx. $250,000. A. Zane Hoffman, c/o owner, ch. engr. CD 3/1/46.

Calif., Los Angeles—B.A. 9/19—Bd. Supervs., Los Angeles Co., 601 Hall of Records, sanitary sewers 2.91 mi. Wedgewood Ave., C. I. 1262, Temple City. $633,100. C. C. Arnold, co. engr. CD 3/1.

Tex., Port Arthur—B.A. 9/19—City, sewage collection sys., north Port Arthur area and interception sewers east of DeQueen St., $65,000. Plans deposit $10. F. Shutts' Sons, 1322 13 St., Port Arthur, engrs. Extended date. CD 7/25.

N. J., Camden—B.A. 9/20—Purchasing Bd., City, City Hall, Delaware River Intercepting Sewer, North Sect. Contr. B. Plans deposit $25. Havens & Emerson, 233 Broadway, New York 7, N. Y., engrs. CD 7/21/49.

LOW BIDDERS

Calif., Davis—City, City Hall, Aug. 21, interceptor sewer, trunk sewer, sewage treatment plant, sewage pumping stations, and oxidation ponds, (2) from A. E. Downer, 305 E. Weber St., Stockton, $102,579; (3) from A. L. Miller, 1715 7 St., Sacramento, $192,900.

Md., Towson—Comrs., Baltimore Co., Court House, Aug. 21, Contr. 227 S sanitary sewer, from Lec Butler Co., Box 97, College Park, $89,923. CD 8/14.

Mass., Webster—Town, Bd. Selectmen, Main St., sewage treatment plant, from Frank J. Shields, Inc., 91 Central St., Southbridge, $311,830. CD 4/20.

O., Toledo—City, B. R. MacRitchie, Service Dir., City Hall rejected bids Aug. 22, storm sewer No. 1673, Homeville Dist. L. B. $229,000. Est. $165,000. Will re-advertise. CD 8/9.

Ore., Portland—City, City Hall, Aug. 23, construct 20 mi. sewer sys. in Bertha Dist. from Empire Const. Co., 4506 S.E. 39 St., $539,466. Est. $500,000. Ben S. Morrow, c/o owner, City engr.

Wash., Shelton—City, City Hall, Aug. 22, primary treatment plant and underground pump station with pumps of 1500-, 1000- and 750-g.p.m. capacity, from Moe Lundberg Constr. Co., 3220 E. Republican St., Seattle. $148,566. Est. $135,000. DCD 7/27.

CONTRACTS AWARDED

Calif., San Jose—City, City Hall, sanitary sewers in Dist. 5, South Willow Glen Annex, to P. & J. Artukovich, 13305 S. San Pedro St., Los Angeles, $148,205. Bids 8/21, awarded 8/21. CD 8/11.

▲ **Pa., Philadelphia**—Dpt. P. Wks., City Hall Annex, main gravity intercepting sewer, to Peter Kiewit & Sons Co., and Bates & Rodgers, 38 S. Dearborn St., Chicago, Ill., $5,432,814. Bids 8/4. CD 8/15, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

September 15
Kansas
Pennsylvania
September 19
Virginia
September 20
Louisiana
Virginia
September 21
California

† **Wyoming**—B.A. 9/14—Bureau Reclamation, Dpt. Interior, Thermopolis, Wyo. constr. footbridge for relocation of Chicago, Burlington & Quincy R. R. Boysen Div., Boysen Unit, Missouri River Basin Proj., approx. 14 mi. south of Thermopolis Spec. 3159.

Calif., Los Angeles—B.A. 9/19—Bd. Supervs., Los Angeles Co., 501 Hall of Records, rein.-con. bridge (North Bridge) San Gabriel River Parkway, Baldwin Park, $500,000. Plans deposit $5. C. E. Arnold, co. engr.

LOW BIDDERS

Maryland—State Rds. Comn., Baltimore, Zone 2, August 25, grading, paving, dual superstructures, steel beam, concrete bridge, 4 spans, total length 170 ft., each lane 30 ft. in width, to carry Wash. National Pike over Comus Rd. and Little Bennett Creek at Hyattstown, also grading, steel beam, concrete bridge, 60 ft. span, 34 ft. road width to carry Comus Rd. over Little Bennett Creek, Contr. M-383-3-315, Montgomery Co., from Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore. $324,774. CD 3/2.

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone B, Contr. 42, constr. substructures and superstructures of a viaduct at relocated Port St. and bridge carrying ramp A of the Port St. Interchange and other incidental work, Newark, Essex Co., to H. L. Harrison & Son Inc., Westfield. $1,218,613. Bids 8/22, awarded 8/28. CD 8/25, under LB.

▲ **Pennsylvania**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Aug. 25, const. continuous deck plate girder and I-beam bridge, divided hy. consisting of: C. conc. pavement 24 ft. wide on each side of C. conc. divisor and plain c. conc. base with bit. 25 ft. and variable on each side of conc. divisor incl. rein.-con. box. c. conc. variable in width 30 to 52 ft., const. rein.-con. bridge, c. conc. with bit. for pavement adjustments, 10.481 ft. L.R. 82 (9), T. R. 6, 19.322, from point in the city of Meadville southwesterly, Crawford Co. to S. J. Groves & Sons Co., 53 Messenger St., Johnstown, $3,775,560. CD 8/11.

SOON LETS CONTRACT

Calif., Bakersfield—Bd. Supers., Kern Co., Courthouse, 340 ft. long span steel beam bridge across Kern River, Kernville, to E. S. & N. S. Johnson, Chapman Bldg., Fullerton $101,965. J. R. Thornton, co. engr. Awarded 8/21.

Georgia—State Hy. Dpt., Atlanta, 4 bridges, 4 culverts on Douglas-Willacoochee Rd., ER-S-3, Coffee and Atkinson Counties, to G. L. Strickler, Austell. $124,120; paved approaches 0.509 mi. at Little Satilla Creek on Baxley-Jesup Rd. near west city limits of Odum, Wayne Co., F-008-1 (1), Wayne Co., to Scott Constr. Co., Thomasville, $75,811. Bids 8/22 awarded 8/22. CD 8/9.

South Dakota—State Hy. Comn., Pierre, one 469 ft. comp. I-beam viaduct S-1900 (1), Lincoln and Sioux Co., Ia., to Dave Gutafson & Co., Inc., 502 E. 6 St., Sioux Falls, S. D., $87,450; one 93 ft., one 67 ft. continuous concrete bridge and one 163 ft. 6 in. comp. I-beam viaduct S-210 (2), Hamlin Co., to Bonesteele & Hyde Inc., Rapids City, $96,883. CD 8/11.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

September 13
Maryland
September 15
Kansas
Minnesota
Pennsylvania
September 19
Maryland
Texas
Virginia
September 20
California
Delaware
Louisiana
New York
Texas
Virginia
September 21
California
October 4
Louisiana

Ala., Eutaw—B.A. 9/18—Greene Co., c/o engr., Eutaw, base, surf. tr. 2.835 mi. on county road from Old West Greene to New West Greene. Plans deposit $10.

† **N. M., Las Cruces**—B.A. about 9/19—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., roads, Phase 2, facilities for U. S. Naval Unit, White Sands Proving Ground (NAV-93 and NAV-914) Serial No. Eng. 29-005-51-6.

† **Oregon**—B.A. 10/3—U. S. Eng., Pittock Block, Portland.

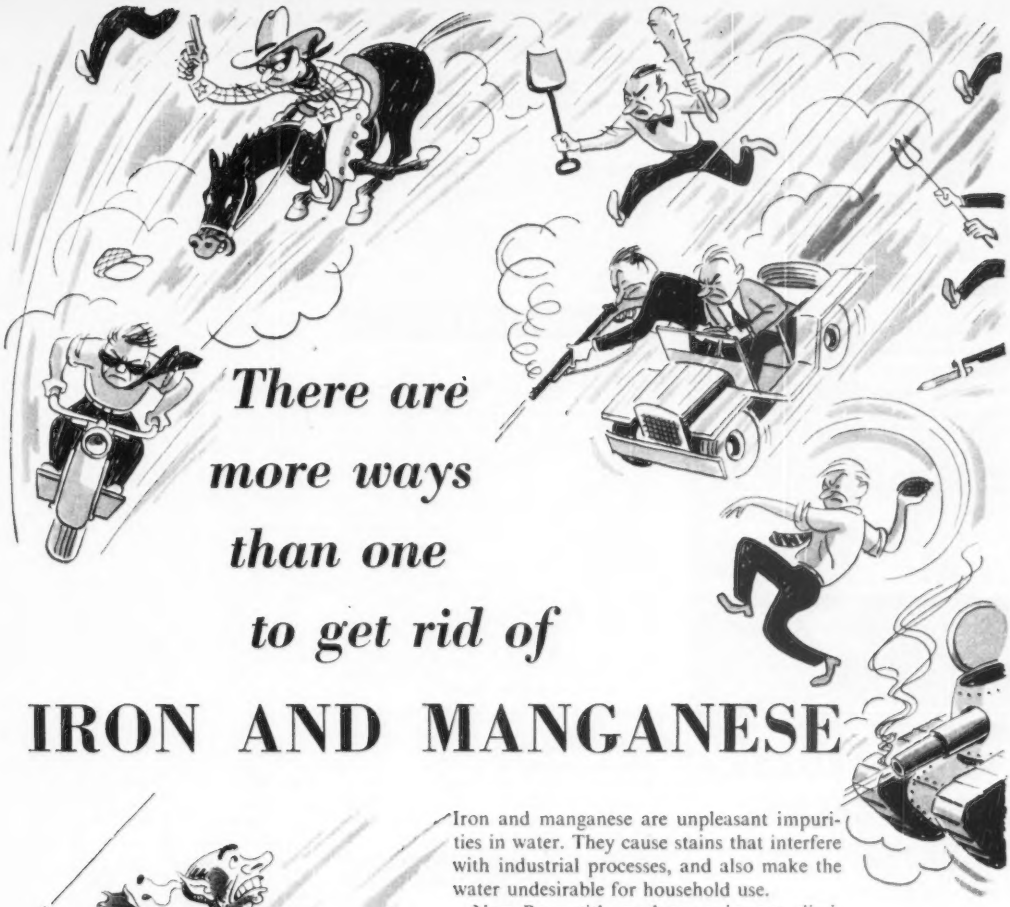
Marion Co.—clearing, grubbing, grading, draining, crushed gravel surf. 7.54 mi., timber access road near Detroit. CIVENG 35-026-51-54.

CONTRACTS AWARDED

▲ **Georgia**—State Hy. Dpt., Atlanta, grading, paving, 1 bridge 6.802 mi. Fort Valley-Reynolds Rd., State RT. 9 beginning in Fort Valley and exten. toward Reynolds, Peach and Crawford Counties, and grading, paving 4.963 mi. Morgan-Dawson Rd., State Rt. 45 beginning at intersection with State Rt. 50 approx. 3 mi. west of Dawson and exten. south to Doweral S-1188 (3), Terrel Co., to Coffee Constr. Co., Eastman, $140,729 and $74,959 respectively***grading, paving 6.626 mi. Lexington-Commer Rd., State Rt. 22 beginning at State Rd. 10 in Lexington and exten. north to end of present pavement S-0900 (1), Oglethorpe Co., and grading, paving, one bridge 7.151 mi. Greensboro-Washington Rd., State Rt. 44 beginning at the end of present pavement approx. 2.8 mi. southwest of Washington and ending at the Taliafarro Co. line, F 069-1 (1), Wilkes Co., to M. R. Woodall Co., Inc., 1501 Lakewood Ave. S.E., Atlanta. $106,053 and $166,411 respectively***grading, paving 5.618 mi. Tallapoosa-Cedartown Rd., beginning at Junction with State Rt. 1 approx. 5 mi. south of Cedartown and ending approx. 700 ft. south of Polk-Haralson Co. line S-0692 (3), Polk and Haralson Counties and grading, paving 1 bridge 1.548 mi. Cordele-Vienna Rd. beginning at 7 St. and Eighth Ave. in Cordelle and exten. to point on State Rt. 7 near Farmers Market FI-001-2 (2), Crisp Co., to W. L. Florence Constr. Co., Powder Springs, $100,292 and $280,616 respectively***grading, paving 1 bridge 8.423 mi. Blairsville-Murphy Rd., beginning at junction with State Rt. 2 in Blairsville and ending at Georgia-North Carolina State Line excepting 2.256 mi. present pavement F C02-7 (1), Union Co., to Lothricge Bros., Gainsville, and Gentry & Thompson, 928 Lindberg Dr. N.E., Atlanta, Ga., $317,008***grading, paving, 1 bridge 6.219 mi. Forsythe-Gray Rd., State Rt. 18, beginning at State Rt. 24 in Nicholson and exten. Rt. 19 and exten. toward Gray S 0964 (3), Monroe Co., to Acme Constr. Corp., Cochran, $113,533*** grading, paving new bridge 2.758 mi. at Oconee River on Jefferson-Nicholson Rd. beginning State Rt. beginning at State Rt. 24 at Nicholson an dexten. toward Jefferson S-0991 (1), Jackson Co., to A. G. Wimpy, Dahlonga, $94,673*** grading, paving 1 bridge 3.365 mi. Milledgeville-Georgia Power Co. Dam Rd., beginning at one end of present pavement in Milledgeville and extend. north S-1083 (1), Baldwin Co., to Harry Brown Milledgeville, $135,411***grading, paving 9.652 mi. Stilson-Guyton Rd., State Rt. 119 beginning at junction with State Rt. 26 at Stilson and ending at present pavement approx. 1.1 mi. west of Guyton S-0723 (1), Bullock and Effinghum Counties, to J. D. Attaway Constr. Co., Statesboro, $159,543*** grading, paving 6.153 mi. Blackshear-Baxley Rd., beginning approx. 6.1 mi. north of Bristol and extend. north to beginning of present pavement F 073-2 (2), Appling Co., to John Mongham Inc., Pelham, $127,335. Grand total, $1,816,559. Bids 8/22, awarded 8/22. CD 8/9.

▲ **Oregon**—State Rd. Comn., State Office Bldg., Salem, grading, topping constr. rein.-con. railroad overcrossing structure bridge .9 mi. over North Powder River and 2 rein.-con. culverts, FAP FG1-321 (2) and FI-321 (3), Baker and Union Counties, to M-L and C. R. O'Neil, Princeton, $162,547***grading, surf. oiling 1.95 mi. on Mill Gulch-Salisbury Section of Baker-Unity Hy., FAP S-255 (3), Baker Co., to Rush Constr. Co., Eugene, $261,075***grading, paving, constr. 7 rein.-con., steel structures 0.37 mi. on Broadway Bridge-Steel Bridge section of Pacific Hy. West, Portland, Multnomah Co., FAP UI-30a (10) Multnomah Co., to C. J. Montag & Sons, 1609 S. W. Park St., Portland, $597,936.

grading, paving 3.23 mi. on Pudding River-Silverton Section of Silverton County Rd., FAP S-40 (3), Marion Co., and grading paving .73 mi. on Santiam Hy. in Sweet Home, Linn Co., to Warren Northwest Inc., Box 5072, Portland, $158,684 and $118,248 respectively***grading, surf. oiling constr. 602 ft. rein.-con., steel bridge on Bybee Bridge section of Table Rock market road FAP S-102 (1), Jackson Co.,



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to Tom Lillebo, Reedsport, $177,350***grading, surf. oiling 1.16 mi. on Viento Park-Wygant Park Section of Columbia River Hy., FAP FI-174 (6) Hood River Co., to Parker-Schram, Builders Exchange Bldg., Portland, $274,110. Grand total $1,739,950. Bids 8/22, awarded 8/22. CD 8/15.

▲ South Dakota—State Hy. Dpt. Pierre, grading, etc., S-210 (2) and S-350 (3), Hamlin Co., to H. G. Seeley, De Smet, $161,934***grading, grav. 15.781 mi. F-1-185 (23) Jones Co., to Lindsey Constr. Co., Fargo, $386,206***grading, grav. 9.053 mi. FI-185 (27), Jackson Co., to S. E. Gustafson Constr. Co., 7 Lactoah Bldg., Sioux Falls, $208,547***grading, processed blotter course 12.440 mi. S-308 (3) Todd Co., to J. H. Beckman Constr. Co., 1730 S. 10 St., Sioux Falls, $177,064***part grading base and top course 4.991 mi. S-442 (11), Union Co., to Lee & Johnson Inc., 216 Insurance Exchange Bldg., Sioux City, Ia., $63,492***base course 15.030 mi. S-196 (6) and S-196 (8), Aurora Co., to Myrl Clark, Tyndall, $135,395***base course 13.997 mi. F-255 (3), Brule Co., to W. E. Bartholow & Sons Constr. Co., Hurin $108,720. Bids 8/22, awarded 8/23. Grand total, $1,241,358. CD 8/11.

EARTHWORK, WATERWAYS

BIDS ASKED

Louisiana—B.A. 9/12—U. S. Eng., P. O. Box 60, Vicksburg, Miss., approx. 191,600 cu. yd. of earthwork and dressing approx. 231 stations of levee crown on Red River Backwater Levee in Concordia Parish.

▲† Washington—B.A. 11/1—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, constr. Chief Joseph Dam across Columbia River, Bridgeport, $30,000,000. Col. E. C. Itschner, dist. engr. CD 9/12/44.

LOW BIDDERS

† California—Bureau Reclamation, Dpt. Interior, Box 570, Tracy, Aug. 22, headworks, pilot fish screen structure and 1.38 kilowatt distribution line, Delta-Mendota Canal, Central Valley Proj., Spec. No. R2-117, from Stolte Inc.-Duncanson Harrelson, 8451 San Leandro St., Oakland, $213,263. CD 8/15.

† South Dakota—U. S. Eng., 1709 Jackson St., Omaha, Neb., Aug. 16, intake hoist gates, Fort Randall Dam, Inv. 200 from Goslin-Birmingham Mfg. Co. Inc., 3521 10 Ave. N., Birmingham, Ala., $766,858. CD 6/23.

† Texas—U. S. Dpt. Agriculture, Soil Conservation Service, 3600 McCart St., Fort Worth, June 28, flood control on Trinity River Watershed, Inv. 806-50, from W. E. Garner, Blue Ridge, $28,000.

† Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, cancelled bids to have been opened Aug. 31, right-bank improts. at Mud Mountain Dam, Serial No. CIVENG 45-108-51-5. CD 8/9.

CONTRACTS AWARDED

† Oklahoma—Soil Conservation Service, 3600 McCarthy St., Fort Worth, Tex., flood control project, earthfill embankment, detention reservoir, outlet structures, concrete pipe, etc., to Dave Johnson Excavation, Davis, $56,706. Bids 5/15.

AIRPORTS

BIDS ASKED

† Alaska, Fairbanks—UTILITIES—B.A. 9/26—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage outside utilities, incl. temporary heating plant, steam distribution lines to existing manholes, installing electrical substation and feeders from power houses to substation, utilidors, incl. water lines, sanitary sewers, steam distr. lines, grading, roads and filling in 8-family housing area. Lielson Air Force Base. Inv. No. S95-507-51-3. Plans deposit $50.

LOW BIDDERS

Mass., East Boston—RESERVOIR—Commonwealth of Mass., State Airport management, Logan Airport, furnish, erect steel reservoir for water storage, Logan Airport, pumping station site Prescott St., from Hammond Iron, Box 629, Warren, Pa., $29,623; constr. fdn. and grading for water storage reservoir, from J. A. Singarella Co., 15 Bay St., Dorchester, $29,480. CD 8/17.

† Alaska, Anchorage—HANGAR—Civil Aeronautics Admin., Anchorage, Aug. 24, 200x350 ft. steel hangar at airport from C. F. Lytle and Green Const. Co., 312 Masonic Temple Bldg., Des Moines, Iowa, $481,370.

CONTRACTS AWARDED

O., Akron—RAMP, etc.— Summit County Comrs., Courthouse, Aug. 18, runway, taxi-strips and concrete ramp 10,000 sq. ft. to Hollinger-Davidson Co., 85 E. Thornton St., $63,627. Bids 7/14 rejected. CD 6/21.

† O., Bellefontaine—RADAR INTERCEPTOR STATION—U. S. Eng., 830 W. Broadway, Louisville, Ky., radar interceptor station near here, incl. construction of 10 buildings, incl. 3 barracks and homes for officers to George S. Sheaf Co., 449 Neilson St., Columbus, $700,000.

† Wash., Tacoma—NOSE HANGARS—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, nose hangars at McChord Air Port Base, to Mowat Bros., 2833 East-lake Ave., Seattle, $413,180, est. $404,155.

PUBLIC BUILDINGS

BIDS ASKED

Kan., Topeka—SCHOOL—B.A. 9/11—Seaman Rural High School Dist. 5, high school, $260,000. C. G. Ossmann & Assoc., Central Bldg., Topeka, archts. CD 8/5/48.

Va., Stafford—SCHOOL—B.A. 9/11—School Bd. Stafford Co., Courthouse, general constr.; electrical plumbing and heating, sewage disposal plant for Falmouth-Stafford High School, 1½ mi. north of here on Hy. Route 1. $500,000. Plans deposit $100. Samuel N. Mayo, 209 Sauers Office Bldg., Richmond, archt.

Ont., Port Credit—SCHOOL WING—B.A. 9/11—S. B. Coon & Son, archts., 4 St. Thomas St., Toronto. 2 story 70x200 ft., rein.-con., Port Credit High School wing, for South Peel High School Bd., Port Credit. Approx. $275,000. Plans deposit $25. CD 10/11/48.

▲ Ky., Louisville—HOUSING—BA. 9/12—Municipal Housing Comn., Second and York St., Zone 2, seventy-five bldgs., 854 rein. con. masonry apartments, $7,950,000. Plans deposit $50, Fred Hartstein, McDowell Bldg., and Louis & Henry, Starks Bldg., archts., E. R. Ronald & Assoc., 544 S. Third St., engrs. CD 7/14.

▲ Minn., Faribault —DORMITORY—B.A. 9/12— State Dpt. Admin., P. T. Peterson, dir. purch., 19 State Capitol, St. Paul, three dormitory bldgs., addn. to heating plant at State School and Colony, $1,750,000. Plans deposit $30. G. Shiffet, Backstrom & Carter, 17 W. Franklin Ave., Minneapolis, archts. (Correction status.) CD 8/3.

▲ N. Y., Elmira—HOUSING—B.A. 9/12—Elmira Housing Auth., 346 Woodlawn Ave., 85 family apartment, $1,000,000. Extended date. Haskell, Comidine & Haskell, Hulett Bldg., archts. CD 8/17.

N. Y., Oceanside — SCHOOL — B.A. 9/12 — Bd. Educ., Union Free School Dist. No. 1, Oceanside, grade school No. 4. Andrew R. Fritz, 189 Sunrise Hy., Rockville Center, archt.

Tex., Dallas—SCHOOLS—B.A. 9/12—Dallas Independent School Dist., Akard & Royal Sts., Dallas, Sisie E. Williams Elementary School, $518,263, Walter W. Cook & Assocs., 9003 Denton Dr., Dallas, archts.; John Neely Bryan Elementary School Easter and Deer Path Sts., $520,000. Smith & Mills, Merchants Bank Bldg., Dallas, archts. Plans deposit $25 each project. Mark Lemmon 1201½ Main St., Dallas, bd. archt. CD 2/9.

Calif., Long Beach—AUDITORIUM—B.A. 9/14—City Bd. Educ., 715 Locust Ave., auditorium at David Starr Jordan High School $700,000. Plans deposit $25. Kenneth S. Wing, 30 Linden Ave., Long Beach, archt. CD 11/18/48.

Ga., Douglas—HOSPITAL—B.A. About 9/14—Coffee Co., hospital. Approx. $250,000. Wm. J. J. Chase & Assocs., 140 Peachtree St., Atlanta, archts. CD 10/6/49.

Md., Catonsville—COTTAGES—B.A. 9/14—State, John B. Funk, ch. engr., 506 Park Ave. Baltimore, Zone 1, four 2 story, stone trim, brick convalescent cottages at Spring Grove State Hospital, $800,000. Plans deposit $50, Jamison & Marcks, 8 E. Mulberry St., Baltimore, Zone 2, archts., J. L. Faisant & Assoc., 2017 Maryland Ave., Baltimore, 18, struct. engrs., Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, Zone 2 mech. engrs. CD 8/18.

Md. Crownsville—COTTAGES—B.A. 9/14—State John B. Funk ch. engr., 506 Park Ave., Zone 1, six 2 story part bsmt., stone trim, brick convalescent cottages at Crownsville State Hospital, $1,200,000. Plans deposit $50, Jamison & Marcks, 8 E. Mulberry St., Baltimore, Zone 2, archts., J. L. Faisant & Assoc., 2017 Maryland Ave., Baltimore, Zone 18, struct. engrs., Egli & Gompf, Inc., 1019 N. Calvert St., Zone 2, mech. engr. CD 8/17.

▲ Md., Owings Mills—INFIRMARY and COTTAGES—B.A. 9/14—State, John B. Funk, ch. engr., 506 Park Ave., Baltimore, Zone 2, four 2 story, brick, block corner, 250,000 cu. ft. infirmary bldgs. and two conc. fdn. steel, 160,000 cu. ft. cottages, $1,500,000. Wrenn, Lewis & Jenks, 113 W. Mulberry St., Baltimore, archts., Van Rensselaer Saxe, 100 W. Monument St., Baltimore, struct. engr.; 1 story, 6 wings, brick, cinder block, steel 301 ft. long Tuberculosis Cottage, at Rosewood State Training School, $250,000. Plans deposit $50, each. Frederick A. Fletcher, 7 E. Franklin St., Baltimore, Alexander E. Forrest, 518 Cathedral St., Baltimore, struct. engr., Turpin, Wachter & Assoc., 1004 N. Charles St., Baltimore, mech. engrs. for both. CD 5/8.

Md., Sykesville—COTTAGES—B.A. 9/14—State, John B. Funk, ch. engr. 506 Park Ave., Baltimore, Zone 1, four 2 story, part bsmt., brick, stone trim convalescent cottages at Springfield State Hospital, $800,000. Plans deposit $50, Jamison & Marcks, 8 E. Mulberry St., Baltimore, Zone 2, archts., Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, mech. engr., J. L. Faisant & Assoc., 2017 Maryland Ave., Baltimore, struct. engrs. CD 3/5/45.

N. Y., Port Washington—SCHOOLS—B.A. 9/14—Bd. Educ., Union Free School Dist. No. 4, Port Washington, 3 schools. $579,000. Extended date. CD 8/17.

N. D., Stanley—HOSPITAL—B.A. 9/14—Stanley Community Hospital Assn., R. Shoff, pres., Stanley, hospital. $250,000. Plans deposit $15. J. V. Vander-

bilt, 617 National Bldg., Minneapolis, Minn., and G. A. Blewett, Assoc., 1905 Inglehart Ave., St. Paul, Minn., archts.

Kan., Wellington—COURT HOUSE—B.A. 9/15—Sumner Co., court house, $260,000. T. W. Williamson & V. H. Loebsack & Assoc., National Bank of Topeka Bldg., Topeka, archts. CD 10/10/45.

N. Y., Brooklyn—GRAIN TERMINAL—B.A. 9/15—At office Chief Engineer, of the Port of New York Auth., 111 8th Ave., New York, Zone 11, construct fire walls and repairs to the pier deck of the Columbia Street Pier and for repairs to the fdn. supports of the Grain Elevator at the Port Auth. Grain Terminal, foot of Columbia St. at Gowanus Bay. Cont. GT-19. Plans deposit $25. adv. ENR 8/31. CD 4/17.

† Nebraska—SHOP—B.A. 9/19—Bureau Reclamation, Dpt. Interior, Grand Island, erecting repair shop bldg. and service station for Grand Island area Headquarters at Grand Island, Spec. R7-144, Missouri River Basin Proj.

Ga., Demorest—HOSPITAL—B.A. About 9/15—Habersham Co., hospital, $450,000. Cuttino & Howard, Mortgage Guarantee Bldg., Atlanta, archts. CD 8/12/49.

Ill., Wauconda—SCHOOL ADDN.—B.A. 9/15—School Dist. No. 118, 2 story, bsmnt., brick, high school addn., $400,000. Childs & Smith, 20 N. Wacker St., Chicago, Zone 6, archts.

N. C., Leaksville—HIGH SCHOOL—B.A. 9/15—City School Trustees, Leaksville, high school. Charles C. Hartmann & Sons, Greensboro, archt.

Tex., Amarillo—SCHOOL—B.A. 9/18—Amarillo Independent School Dist., Amarillo, 2 story 59x76 ft. and 54x116 ft. masonry Landerin School addns.; steam heating. Approx. $250,000. J. Roy Smith, Blackburn Bldg., archt. CD 4/15/47.

▲ N. J., Princeton—HOSPITAL ADDNS., etc.—B.A. 9/19—Princeton Hospital, 253 Witherspoon St., hospital addns., alterations, $1,000,000. York & Sawyer, 101 Park Ave., New York 17, N. Y., archts.

▲ Wash., Seattle—SCHOOL—B.A. 9/21—School Dist. No. 1, 815 4 Ave. N., 1 and 2 story 141x222 ft., 172x217 ft., 129x180 ft., 151x320 ft., and 145x208 ft. rein.-con. Junior High School in southwest part of city, $1,500,000. Mallis, DeHart & Hopkins, Lyon Bldg., Zone 4, archts. DC 4/7.

▲ N. Y., New York—SCHOOL—B.A. 9/22—Supt. School Bldgs. Design and Construction, 49 Flatbush Ave. exten. Brooklyn, Zone 1, general const.; plumbing and drainage; electrical and lighting fixtures; heating and ventilating for P. S. 121, Arnow Ave. between Bouck and Throop Aves., $1,852,600. Plans deposit $22 general const.; $6. plumbing and drainage; $8 each, heating and ventilating, electrical and lighting. Bids 8/2 rejected. CD 7/14.

▲ Ark., Little Rock—HOUSING—B.A. 9/28—Little Rock Housing Auth., 313 Commercial National Bank, 400 unit housing project, $3,250,000. Plans deposit $50. Wittenberg, Delony & Davidson, Pyramid Bldg., archts. CD 5/17.

LOW BIDDERS

▲ Conn., Bristol—HOUSING—City of Bristol Housing Auth., Cambridge Park Div., Bristol, Aug. 18, 122 unit housing project, MR-21, from Anderson Fairoaks Constr. Co., 141 S. Marshall St., Hartford, $1,349,500. CD 8/11.

Fla., Tampa—HOUSING—Tampa Housing Auth. c/o Norman F. Six, archt., Hillsboro Hotel Lobby, Tampa, Riverview Terrace Housing Project, from Ellis-Thompson Constr. Co., 3603 Morrison Ave., Tampa, $683,368. CD 8/3.

Ga., Cartersville—SCHOOL—City, Aug. 24, high school, from Preston-Chambers Constr. Co., 515 Church St., Decatur, $545,644. CD 8/3.

La., New Orleans—SCHOOL—Orleans Parish School Bd., 703 Carondelet St. August 24, brick, tile Lakeview Elementary School, from Farnsworth & Chambers Co., Inc., P. O. Box 74, Houston, Tex., $736,000. CD 8/3.

▲ Neb., Norfolk—HOSPITAL—State Bd. Control, Lincoln, rejected bids Aug. 22, administration and receiving bldg. at Norfolk State Hospital. L. B. $959,797, est. $1,250,000. CD 8/28, under CA.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, general const. Sect. II, Alfred E. Smith Houses Proj. NYS. 25, bounded by Madison, Catherine, Oak, James and New Chambers St. and St. James Pl., from Cauldwell-Wingate Co., 101 Park Ave., Zone 17, $5,938,000**heating and ventilating from Dierks Heating Co., 43-32 33 St., Long Island City, $332,400***plumbing from Eugene Duklauer Co., 215 E. 38 St., Zone 16, $564,538*** electric from Hanson Electric Co., 237 Flatbush Ave., Brooklyn, Zone 17, $279,447. CD 8/3.

▲ N. C., Raleigh—HOUSING—Raleigh Housing Auth., Halifax Ct., Aug. 22, housing units from T. A. Loving & Co., Bank of Wayne Bldg., Goldsboro, N. C., $1,159,850. CD 7/25.

▲† Pa., Pittsburgh—GENERAL MEDICAL HOSPITAL—U. S. Eng., 925 New Federal Bldg., Zone 19, Aug. 29, general medical hospital University Dr. from John A. Johnson Sons Co., 268 41 St., Brooklyn 32, New York, $12,323,000. CD 8/18.

CONTRACTS AWARDED

▲ Ala., Camp Rucker—BUILDINGS—U. S. Eng., P. O. Box 1169, Mobile 7, Ala., rehabilitation of buildings at Camp Rucker, to Henderson, Black & Green, Troy, Approx. $1,500,000.

Ala., Opelika—HOSPITAL—Lee Co., hospital, to Batson-Cook Co., West Point, Ga., $708,000. Bids 8/15. CD 8/23, under LB.

Calif., Long Beach—SCHOOL—City Bd. Educ., 715 Locust Ave., Charles Lindberg Junior High School to Brunzell Constr. Co., 3945 Figueroa St., Culver City, $859,581, est. $725,450. Bids 8/17, awarded 8/22. CD 8/24, under LB.

Calif., Redding—SANATORIUM, etc.—Shasta, Trinity, Siskiyou and Lassen Counties, Courthouse, Redding 1 story 75-bed rein.-con. Cascade Sanatorium and power plant to Central State Constr. Co., 593 Market St., San Francisco, $696,800. Bids 8/10. CD 8/18, under LB.

Del., Farnhurst—HOSPITAL—Delaware State Hospital, Bd. Trustees, Farnhurst, general contract, hospital addn., to Rupert Constr. Co., 3400 Lancaster Ave., Wilmington, $479,835. Bids 8/2, CD 8/16, under LB.

▲ Md., Baltimore—HOSPITAL—City, R. E. L. Williams, bldg. constr. engr., 410 Municipal Bldg., Zone 2, 4 story, bsmnt., H-shaped 47x242 ft., 80x130 ft. and 47x242 ft. brick block, steel, concrete Tuberculosis Bldg., (negro) on grounds of Baltimore City Hospital Eastern Ave., to Jeffress Dyer, Inc., 908 20 St. N. W., Washington, D. C., $2,114,000. Awarded 8/13. CD 8/22.

▲ Md., Baltimore—SCHOOL—City, R. E. L. Williams, Bldg. Constr. Engr., 410 Municipal Bldg., Zone 2, 1 and 2 story, bsmnt., brick, block, steel, concrete, limestone Northwood Elementary School Loch Raven Blvd. and Chinquapin Run, to Leimbach Constr. Co., 3906 Hickory Ave., $1,234,300. Awarded 8/23. CD 8/22.

Md., Chestertown—SCHOOL—Kent Co. Bd. Educ., 1 story 94x130 ft. Garnett High School addn. and 100x177 ft., 4 classroom Chestertown High School, to Chas. E. Brohawn & Bros., 21 Poplar St., Cambridge, $456,923. Buckler, Fenhage, Meyers & Ayers, 24 and St. Paul St., Baltimore, archts., Chas. E. Daniel, 24 and St. Paul St., Baltimore, mech. engr., Van Rensselaer Saxe, 100 W. Monument St., Baltimore, struct. engr.

▲ N. J., Paterson—SCHOOL—Bd. Educ., City Hall Annex, 137 Ellison St., P. S. 26 E. 32 St. and 10 Ave., to Thomas Constr. Co., 165 Halsted Ave., Paterson, $1,101,800. Bids 7/20. CD 7/10.

▲ † N. M., Los Alamos—LABORATORY—U. S. Atomic Energy Comm., Los Alamos, laboratory, Proj. D TA-1 Inv. No. 291-50-59 to Utah-Leavell Co., P. O. Box 341, $11,209,290. Bids 6/20. Awarded 8/25. CD 6/27, under LB.

Mich., Ypsilanti—COLLEGE—State, A. N. Langius, dir. Bldg., Dpt., State Office Bldg., 2 story, brick, steel Michigan State Normal College, to O. W. Burke Co., 1032 Fisher Bldg., Detroit, $686,748. CD 8/6/45.

▲ Ore., Portland—HIGH SCHOOL—School Dist. No. 1, 631 N. E. Clackamas St., Lincoln High School to Donald M. Drake Co., Lewis Bldg., $1,885,000, est. $2,500,000. Awarded 8/26. CD 8/28, under LB.

Utah, Salt Lake City—SCHOOL—Bd. Educ., 440 E. 1st South St., Rose Park Elementary school to Paul Paulson Const. Co., P. O. Box 2514, $419,775. Stack Winburn, 619 Beason Bldg., archt. Bids 8/22.

COMMERCIAL BUILDINGS

BIDS ASKED

▲ Tex., Houston—OFFICE, etc.—B.A. 9/18—Prudential Insurance Co. of America, Scanlan Bldg., 18 story, bsmnt., 150x225 ft., structural steel masonry 326,000 sq. ft. office. Approx. $8,000,000. Plans deposit $50; 800 auto carport and asphalt-paved parking zone, $250,000. Plans deposit $25. Kenneth Franzheim, 2306 Crawford St., archt., Dale S. Cooper & Assocs., 420 Sul Ross, and Ward Butterick, 2306 Crawford St., struc. engrs. CD 8/24.

Wash., Seattle—MUSEUM—B.A. 9/12—Seattle Historical Society, 330 Henry Bldg., museum, $300,000. P. Thirty, 8 and Columbia Sts., archts. CD 5/25/45.

Tex., Austin—OFFICE—B.A. 9/14—F. D. Glass, Jr., 2520 Enfield Rd., 7 story bsmnt, 50x90 ft. office, $750,000. Plans deposit $50. Extended date. Giesecke, Kuehne & Brooks, 121 E. 6 St., engrs. and archts. CD 8/22.

Minn., Alexandria—HOME—B.A. 9/15—Bethany Home for the Aged, Alexandria, 3 story, home bldg. addn., $250,000. Plans deposit $25. Armstrong & Schlichting, 5 E. 22 St., Minneapolis, archts.

▲ Ore., Portland—HOSPITAL—B.A. 9/22—Good Samaritan Hospital, 2266 N.W. Marshall St., 7 story, 297-bed, rein.-con. wing to hospital. Sutton, Whitney & Aandahl, Lewis Bldg., archts. CD 8/8/49.

Mass., Boston—MUSEUM—Bids Asked—Boston Museum of Fine Arts, G. H. Edgell, dir., Huntington Ave., 2 story museum addn., on Court floor, Huntington Ave., $500,000. Leland & Larsen, 824 Statler Bldg., archts. CD 1/31/49.

CONTRACTS AWARDED

▲ Del., Elsmere—APARTMENT DEVELOPMENT—Woodland Apartments Dumont Bldg., Wilmington, 261 unit 1 and 2 story 50x152 ft., brick apartment development, to Anthony P. Miller Inc., 333 Artic Ave., Atlantic City, N. J., $2,000,000. W. R. Morton Keast 1201 Chestnut St., Phila., Pa., archt.

▲ Fla., Cocoa—HOUSING—Dpt. Air Force, Pentagon Bldg., Wash., D. C., construct, manage and finance 180 housing units for personnel at Patrick Air Force Base near here, to Hillyer & Lovan Inc., 666 Dyal St., Jacksonville, Zone 1, $1,500,000. CD 6/28, under CA.

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SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

▲ Fla., Elgin Field—HOUSING—Dpt. Air Force, Pentagon Bldg., Wash., D. C., construct, manage and finance, 525 housing units for personnel housing at Elgin Air Force Base, Valparaiso, to G. W. Klosterman Inc., P. O. Box 4957, Pensacoal, $4,340,000. Awarded 7/13. CD 8/3.

▲ Ill., Homewood—HOMES—Manilow Constr. Co., 105 W. Monroe St., Chicago, Zone 3, 400 homes at Governors Hy. and 175 St., Owner builds, $5,000,000, Carl J. Kastrup, 7346 Madison St., Forest Park, archt. Awarded 8/21.

▲ N. J., Newark—HOUSING—Levin Bros. Inc., 642 Broadway, 2025 unit apartment house project, on 31 acre tract facing Irvington Ave., Owner builds, $19,000,000. Kelly & Gruzen, 921 Bergen Ave., Jersey City, archts.

▲ Mo., St. Louis—RESEARCH BUILDING—Washington University, Arthur H. Compton, chancellor, Admin. Bldg., Skinker and Lindell Blvd., Zone 5, 2 story, 118x145 ft. Missouri red granite, cut stone, rein. con., brick Louderman Hall Chemistry Research Bldg. to Gamble Constr. Co., 804 Pine St., Zone 1. $1,000,000. Bids 8/21. CD 7/28.

▲ Pa., Pittsburgh—NURSES HOME—University of Pittsburgh, Forbes St., nurses home to Trimble Co., 1719 Penna Ave., $3,657,000. est. $4,175,000. CD 7/26.

▲ Tenn., Smyrna—HOUSING—U. S. Air Force, c/o contractor, construct, manage and finance, 600 housing units at Steward Air Force Base to W. F. Holt & Sons, Demonbreun St., Nashville. Approx. $5,000,000.

▲ Tex., Bellaire—DWELLINGS—Thomas W. Menefee, Bellaire, 88 dwellings off Post Oak Rd. Own forces. Approx. $1,150,000. CD 8/18.

INDUSTRIAL BUILDINGS

BIDS ASKED

Pa., Phila.—WAREHOUSE, etc.—Bids Asked—Wm. Goldberg, Fox Bldg., warehouse and office, $120,000. Herman H. Kline, 1211 Chestnut St., Phila., archt.

SOON LETS CONTRACT

Calif., North Sacramento — WAREHOUSE, etc. — Kraft Foods Co., 500 N. Peshtigo St., Chicago, Ill., soon lets contract, 1 story, rein.-con., steel frame, warehouse and distribution bldg. $200,000. Kaj. Theill, 580 Market St., San Francisco, engr.

Ill., Chicago—GARAGE ADDN.—Chicago Service Parking Co., corner Wabash St., soon lets contract, 3 story 90,000 sq. ft., garage addn., $500,000. Thos. R. Shiver, 53 W. Jackson St., Chicago, Zone 4, engr.

Ky., Louisville — WAREHOUSE — American Radiator & Standard Sanitary Mfg. Co., 834 E. Broadway, soon lets contract, warehouse offices and pipe yard on South Brook St., $400,000, Joseph & Joseph, Speed Bldg., Zone 2, archts., E. R. Ronald & Assoc., 554 S. Third St., Zone 2, engrs. CD 12/20/49.

Tex., Dallas—WAREHOUSE—Glazer's Wholesale Drug Co., 1606 Young St., soon lets contract masonry warehouse, $100,000. Geo. W. Edwards, 1509 A Cochran St., Dallas, archt.

LOW BIDDERS

Tex., Houston—WAREHOUSE—Wyatt C. Hedrick, 5201 Fannin, August 18, roman brick, masonry warehouse off Old Spanish Trail and Old Main St., from Tellepsen Constr. Co., 1710 Telephone Rd., $109,865, Wyatt C. Hedrick, 5201 Fannin, archt. CD 8/9.

CONTRACTS AWARDED

▲ Ala., Butler—MILL—Choctaw Pulp & Paper Co., c/o Paul D. Hammacher, Butler, paper mill, Naheola, to J. A. Jiley Co., 723 New Hampshire R. D, Detroit, Mich., Approx. $40,000,000.

Calif., Montebello—FACTORY—J. Ross Casendike, 5729 Maywood Ave., Maywood, 32,000 sq. ft., steel frame factory, Owner builds, $96,000. D. R. Edwards, 5911 Pine Ave., Maywood, engr.

▲ Fla., Palatka—MILL EXTEN.—Hudson Pulp & Paper Co., Palatka, general structural work for pulp and paper mill exten., to Hillyer & Lovan, Inc., 666 Dyal St., Jacksonville, $2,000,000. (Correction—price.) CD 8/17, under CA.

Kan., Turner—FACTORY—Fairbanks Morse & Co., Fairbanks Morse Bldg., 600 S. Michigan Ave., Chicago, Ill., design and constr. scale factory on Hy. 132 east of Turner, to Stone & Webster Engr. Corp., 33 S. Clark St., Chicago, Ill., $5,000,000. CD 6/12 under Kansas City, Kan.

La., New Orleans—WAREHOUSE—Western Electric Co., c/o contractor, warehouse to C. N. Bott, 2551 Metairie Rd., $950,000. CD 8/18.

▲ N. C., Raeford—PLANT—Robbins Mills, Inc., c/o contractor, 300,000 sq. ft. rayon weaving plant to C. M. Guest & Sons, Greensboro. Approx. $7,500,000.

▲ O., Dayton—WAREHOUSE—White Villa Grocers, Geo. Wendel, mgr., 1026 E. Third St., general contract, 1 story, 182,000 sq. ft. warehouse and office, Webster St. to Henry Stock and Son, 30 N. Ludlow St., $1,000,000. CD 7/11.

▲ Wis., Superior—GRAIN ELEVATOR ADDN.—Farmers Union Grain Terminal Assn., Snelling Ave. North and Penteon Ave. West, St. Paul, Minn., 3 unit grain elevator addn., 65x456 ft. 165 ft. high at Hughitt Slip, to McKenzie-Hague-Simmons Co., 1116 Flour Exchange Bldg., Minneapolis, Minn., $1,000,000.

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UNCLASSIFIED

BIDS ASKED

† N. M., Las Cruces—FIELD INSTRUMENTATION—B.A. 9/21—U. S. Eng., P. O. Box 1538, Albuquerque, extens. of field instrumentation stations (P-07 and P-98) White Sands Proving Ground, Serial No. Eng 29-005-51-5.

† North Dakota—SUBSTATIONS—B.A. 9/21—Bureau Reclamation, Dpt. Interior, Bismarck, construct 10,000 kva Carrington, 20,000 kva Edgeley, 10,000 kva. Forman substations, Spec. R6-48 (Region 6), Missouri River Basin Proj. Transmission Div.

▲ Calif., Long Beach—TRANSIT SHED—B.A. 9/22—City Harbor Bd., 1333 W. Embarkadero St., Long Beach, rein.-con. cargo transite shed at Berth 9 and 10, Pier A. $1,250,000. E. J. Amar, port engr. CD 12/6/44.

LOW BIDDERS

Ala., Mobile—CONVEYOR SYSTEM—Alabama State Docks & Terminal, c/o J. B. Converse & Co., Inc., engrs., 106 St. Joseph St., engrs., Aug. 25, conveyor system, from Link-Belt Co., Comer Bldg., Birmingham. $702,000. CD 8/2.

† California—ELECTRICAL EQUIPMENT—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Aug. 22, Schedules 1, circuit breakers, for Tracy Switchyard Central Valley Proj., Spec. 3124, from Westinghouse Electric Corp., Gas & Electric Bldg., Denver. $137,200. CD 7/17.

CONTRACTS AWARDED

▲ Maryland—NATURAL GAS PIPE LINE—Prince Georges Gas Corp., c/o Washington Gas Light Co., 11 and H Sts. N. W., Washington, D. C., 20 mi. 22 in. welded steel natural gas pipe line, Chillum to Rockville, Prince Georges and Montgomery Counties, to Holland Constr. Co., Kennedy Bldg., Tulsa, Okla., $1,360,000. CD 7/11.

Montana—TRANSMISSION LINES—Bonneville Power Admin., 827 N E. Oregon, Portland, Ore., 76.9 mi., 230 kv transmission line clearing right of way for Schedules 2, 3 and 4 of Clark Fork section of Spokane Hot Springs, to W. D. Zavalas, Oroville, Calif. $222,925. Bids 8/23. Awarded 8/23. CD 8/18.

▲ N. Y., Long Island City—SUBWAY TUNNEL—Bd. Transportation, 250 Hudson St., New York, 60th St. Tunnel connection to IND Div., Rt. 125 A, Sec. 1 and 2 to Arthur A. Johnson Co. and Mason & Hanger Co., 347 Madison Ave., New York, Zone 17, $7,236,000. Bids 8/18. (Correction—cost.) CD 8/25, under CA.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: September 26, 1950 (962)

Sewage Treatment Plant Contract No. 2

LEHIGHTON SEWERAGE AUTHORITY
Lehighton, Carbon County
Pennsylvania

Sealed proposals will be received by the Lehighton Sewerage Authority at 124 North Second Street, Lehighton, Pennsylvania, until 7:30 o'clock P.M. Eastern Standard Time, on the 26th day of September, 1950, for the CONSTRUCTION OF A SEWAGE TREATMENT PLANT, CONTRACT NO. 2, and will be publicly opened and read in the Municipal Building, Lehighton, Pa., immediately thereafter.

Copies of plans, specifications and other contract documents are on file and open to public inspection at the office of the Secretary, Russell R. Smith, 124 North Second Street, Lehighton, Pa., and at the office of the Engineers, William A. Goff, Inc., 504 Keystone State Building, 1321 Arch Street, Philadelphia 7, Pa. Complete sets of such documents may be obtained from the Engineers upon payment of $30.00 for each set. If documents are returned in good condition within fifteen days after the opening of bids, $15.00 for each set will be refunded. If documents are not returned within time stated, entire payment will be forfeited.

Each bidder must deposit with his bids, security in an amount of not less than five percent of the base bid, in the form and subject to the conditions provided in the Instructions to Bidders.

No bidder may withdraw bid within thirty days after opening.

The undersigned reserve the right to waive informalities or to reject any or all bids.

LEHIGHTON SEWERAGE AUTHORITY
Russell R. Smith
Secretary

Bids: September 26, 1950 (961)

Sanitary Sewers Contract No. 1

LEHIGHTON SEWERAGE AUTHORITY
Lehighton, Carbon County
Pennsylvania

Sealed proposals will be received by the Lehighton Sewerage Authority at 124 North Second Street, Lehighton, Pennsylvania, until 7:30 o'clock P.M. Eastern Standard Time, on the 26th day of September, 1950, for the CONSTRUCTION OF SANITARY SEWERS, CONTRACT NO. 1, and will be publicly opened and read in the Municipal Building, Lehighton, Pa., immediately thereafter.

Copies of plans, specifications and other contract documents are on file and open to public inspection at the office of the Secretary, Russell R. Smith, 124 North Second Street, Lehighton, Pa., and at the office of the Engineers, William A. Goff, Inc., 504 Keystone State Building, 1321 Arch Street, Philadelphia 7, Pa. Complete sets of such documents may be obtained from the Engineers upon payment of $30.00 for each set. If documents are returned in good condition within fifteen days after the opening of bids, $15.00 for each set will be refunded. If documents are not returned within time stated, entire payment will be forfeited.

Each bidder must deposit with his bid, security in an amount of not less than five percent of the base bid, in the form and subject to the conditions provided in the Instructions to Bidders.

No bidder may withdraw bid within thirty days after opening.

The undersigned reserve the right to waive informalities or to reject any or all bids.

LEHIGHTON SEWERAGE AUTHORITY
Russell R. Smith
Secretary

Bids: September 20, 1950 (956)

State Road Work

Sealed proposals will be received by the State Highway Department at its offices, Dover, Delaware, until 2:00 P.M., E.S.T., September 20, 1950, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 1118
SMYRNA TO STATE ROAD
Patching Present Cement Concrete
420 C. Y. Extra Depth Excavation
550 C. Y. Selected Borrow
2,500 S. Y. Patching

CONTRACT 1119
MD. LINE TO STATE ROAD
Patching Present Cement Concrete
780 C. Y. Extra Depth Excavation
1,000 C. Y. Selected Borrow
4,700 S. Y. Patching

The Employment Agency for these contracts shall be the Delaware State Employment Service whose offices are located at 601 Shipley Street, Wilmington, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after the execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ....."

The right is reserved to reject any or all bids.

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

Complete sets of specifications may be obtained after September 1, 1950, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: J. Gordon Smith, Chairman
M. Allan Wilson, Chief Engineer.
Dover, Delaware.
August 23, 1950 (35c)

Bids: September 19, 1950 (960)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 51

The work to be done under this Contract involves the construction of the substructures and superstructures of the Bergen Turnpike Underpass and the Route 6 Overpass, located in Ridgefield Park, Bergen County, and other incidental work, all in connection with the construction of the New Jersey Turnpike.

Principal items of work include:

Open Foundation Excavation	1,620 Cu. Yds.
Porous Fill	500 Cu. Yds.
Concrete	2,090 Cu. Yds.
Reinforcement Steel	298,000 Lbs.
Treated Timber Piles	8,900 Lin. Ft.
Cast-in-Place Concrete Piles	15,100 Lin. Ft.
Structural Steel	790,000 Lbs.
Metal Railing	910 Lin. Ft.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock, Eastern Daylight Saving Time, on the morning of September 19, 1950, and thereafter in the Veteran's Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M., Eastern Daylight Saving Time, on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plant and equipment.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after August 31, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

THE NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

U. S. Government

General Services Administration, Public Buildings Service, Washington, D. C., Aug. 30, 1950—Sealed bids in duplicate for remodeling the office building at 17 Court Street, Boston, Massachusetts will be received until 1:00 P.M., Standard Time, on Sept. 13, 1950, in Room No. 7330, General Services Building, Washington, D. C., and then publicly opened in Room No. 7035. Bid guarantee is required. If the amount of the contract exceeds $2000, U. S. Standard Form No. 23, Construction Contract, will be used and performance and payment bonds will be required. Upon request one set of Prebid Documents and two sets of drawings and specifications will be supplied without charge to each general contractor interested in bidding on the complete project, all of which must be returned. Not more than six additional sets of drawings and specifications may be obtained by general contractors at a charge of $5.00 per set, which will be refunded for each set returned in good condition within 10 days after the bids are opened. Checks offered as payment must be made payable to the order of the Treasurer, United States. Upon request and in the discretion of the undersigned one set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested sub-contractor or material firm. Bidding material may be obtained at Room No. 1304 General Services Building, 19th and F Streets, N. W., Washington 25, D. C., Phone EXecutive 4900, Extension 2397. W. E. Reynolds, Commissioner of Public Buildings Service, General Services Administration.

(959)

(Continued on page 104)

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

(Continued from page 103)

Bids: September 19, 1950 (954)

Widening & Resurfacing Road

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 35, SECTION 5A

Widening and resurfacing on Route 35, Section 5A, from Navesink River to Harvard Street, Middletown Township, Monmouth County. Length 1.107 miles.

Estimated:

3,400 cu. yds. Roadway Excavation-Earth
10,000 sq. yds. 8" Gravel Base Course
11,000 sq. yds. 3" Mod. Pen. Mac. Inter. Course
5,800 tons Pavement, Type MA-BC

Bids for the above will be received at the office of the State Highway Department, Room 140 in the State Highway Office building, 1035 Parkway Avenue, Trenton, N. J. on Tuesday, September 19, 1950, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten per cent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. ABBOTT
State Highway Commissioner

Bids: September 18, 1950 (957)

Sprinkler System

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL
COLUMBIA STREET PIER
CONTRACT GT-20

Sealed proposals for furnishing and installing a sprinkler system for the Columbia Street Pier of the Port Authority Grain Terminal, Foot of Columbia Street at Gowanus Bay, Brooklyn, N. Y., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P.M., Monday, Sept. 18, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.
New York, September 7, 1950.

OFFICIAL PROPOSALS

Bids: September 20, 1950 (950)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway & Building Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on September 20, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 5				
		C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.				
Erie	FAC NT50-1	City of Buffalo: Niagara Thruway Incl. Court St. & Porter Ave. Connections) Proj. U865(5)	1.059	Cem. Conc. Pvt. 20'-37' Wide=0.86 mi. Asph. Conc. Type 2A=0.17 mi. Misc. Work=0.02 mi.	$25,000 Plans $10.00	$473,000
Erie	GISP50-1	Grand Island State Parkway, G. I. S. P. 49-1	4.81	Waterproofing Pvt. & Curb.	$100 Plans $2.00	2,000
		DISTRICT No. 6				
		H. F. Brumm, District Engineer, 30 West Main Street, Hornell, N. Y.				
Steuben	FASS 50-9	Addison Village: South Street, Co. Rd. 5 Proj. S332(1)	0.11	Asph. Conc. Ty. 1a, Opt. 3 Sp. Alpha I-Beam 243' Alpha=$241.50	$12,000 Plans $15.00	206,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Rd., Poughkeepsie, N. Y.				
Ulster and Sullivan	SH50-10P	Woodbourne-Ellenville, Pt. 2B, S. H. 49-4; Pt. 2A, S. H. 49-6; Pt. 1, S. H. 49-7 & Pt2C & Pt. 1A	11.05	8" Cem. Conc. Pavt. 24' Wide=11.02 mi. Asph. Conc. Type 1A, Opt.=0.03 mi.	$62,000 Plans $25.00	1,036,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Nassau		East Atlantic Beach		Beach Protection 2 Stone Jetties	5% of Bid Plans $10.00	253,500
Suffolk	RC50-35	Amityville Village: Broadway, SH1633 Amityville Village, SH 5300	0.68	Asph. Conc. Type 1A, Opt.=0.47 mi Misc. Work=0.21 mi.	$7,000 Plans $10.00	128,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Building Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: September 21, 1950 (948)

Toll Booths & Equipment

THE DELAWARE MEMORIAL BRIDGE
NOTICE TO BIDDERS
CONTRACT NO. 19—ADMINISTRATION BUILDING, TOLL BOOTHS AND TOLL COLLECTION EQUIPMENT

Sealed proposals for construction of Administration Building, Toll Booths and Toll Collection Equipment for "The Delaware Memorial Bridge" over the Delaware River near Wilmington, Delaware, will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Continental American Building, Wilmington, Delaware, until 12 o'clock noon, Eastern Daylight Saving Time (11:00 A.M. Eastern Standard Time), September 21, 1950. Immediately thereafter proposals will be publicly opened and read in the Council Chamber, Wilmington City Hall.

The entire work involves the following:

(1) Construction of a one-story brick-veneered administration building approximately 101 feet long by 41 feet wide overall, with heating, lighting and plumbing facilities.
(2) Construction of five metal and glass toll booths, with connecting metal canopy.
(3) Furnishing and installing toll collection equipment.
(4) Furnishing and installing roadway treadle and counters.
(5) The construction of approximately 1100 feet of two (2) inch diameter water supply line.

Work on Contract 19 shall begin promptly after the execution of the Contract. It shall be completed in accordance with the following schedule:

Administratoin Building Foundations, Exterior Walls and Roof, December 15, 1950; Entire contract, May 15, 1951.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check to the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, and at the office of the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. One complete set of the Plans and two copies of the Specifications may be obtained from the Engineers after August 31, 1950 upon payment of $25.00. Any prospective bidder who has made such a deposit may secure extra blueprint copies of the Plans upon payment of 50 cents per drawing, and extra copies of the Specifications upon payment of $2.00 per copy.

All Plans and Specifications shall be returned to the Engineers, and on such return $10.00 of the above payment will be refunded. No refund will be made out of payments for extra prints of the Plans. Full refund of deposit will be made out of payments for extra copies of the Specifications. All such refunds will be made only upon return of the documents within 10 days after the opening of proposals.

State Highway Department
By: J. Gordon Smith,
W. W. Mack, Director Chairman.
Delaware Crossing Division
August 23, 1950

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 3167) will be received by Bureau of Reclamation, Denver, Colorado, September 28, 1950, and then publicly opened for furnishing one 100-ton single-trolley, motor-operated traveling crane for Colorado-Big Thompson Project, Colorado. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (951)

(Continued on page 105)

OFFICIAL PROPOSALS
(Continued from page 104)

Bids: September 13, 1950 (958)

Furnishing and Delivering Mechanical Joint Cast Iron Pipe

WASHINGTON SUBURBAN SANITARY COMMISSION

CONTRACT NO. 834-W

Sealed proposals for furnishing and delivering one-thousand (1,000) lineal feet of 3-inch; one-thousand (1,000) lineal feet of 4-inch; thirty-thousand (30,000) lineal feet of 6-inch; fifty-thousand (50,000) lineal feet of 8-inch; fifteen-thousand (15,000) lineal feet of 10-inch; fifteen-thousand (15,000) lineal feet of 12-inch and one-thousand (1,000) lineal feet of 20-inch mechanical joint cast iron water pipe, Class 150, 12-inch and 20-inch to be cement lined, including necessary gaskets, glands, and bolts will be received in the office of the Purchasing Agent, Room 3, of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 2:30 P. M. Eastern Daylight Saving Time on Wednesday, September 13th, 1950 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

Bids: September 20, 1950 (952)

State Road Work

Sealed Bids will be received at the Department of Highways, Room 400, Central Highway Office Building, 1221 E. Broad Street, Richmond, Virginia, until 10 A.M., Tuesday, September 19th and 10 A.M., Wednesday, September 20th, 1950, for the construction of:

The Following Projects Will Be received on September 19, 1950:

Route	Project	County	Description
147	4743-03-04	City of Richmond	Overpass & Approaches Overpass R.F.&P. R.R. on Cary St. Road
161	2020-01	Chesterfield	86' Double 3' x 3' Box Culvert 0.24 Mi. S. of W. C. L. Richmond (Belt Boulevard)
337	4764-01-02	City of Norfolk	1.64 Mi. 2-33' x 7" Pl. Con. Conc. Pave. 0.04 Mi. S. Bolling Ave.- 0.06 Mi. N. Norfolk-Portsmouth Belt Line R.R.
60	2194-03-04	Warwick	0.37 Mi. Bit. Conc. Top Curb, Gutter & S. W. 2.02 Mi. W. of W. C. L. Hilton Village— 2.43 Mi. W. of W. C. L. Hilton Village
306	3183-02; 4883-01	Russell	0.62 Mi. 5' x 4" Conc. Sidewalk & Incidentals 0.16 Mi. E. of E. C. L. Lebanon— 0.52 Mi. N. of W. C. L. Lebanon
165 & 60	Schedules 52-50 & 54-50	Norfolk and Princess Anne	Bituminous Plant Mixed Materials Rt. 13-Y—Rt. 165 & Fort Story By-pass
60	2103-02-03-04	Alleghany	607'-5" Bridge over Jackson River & Approaches 3.62 Mi. E. of E. C. L. Covington— 2.79 Mi. E. of E. C. L. Covington
11	1634-02 (T.&P. 93)	Frederick	Truck Weighing Station 1.90 Mi. N. of N. C. L. Middletown
11	T.&P. 94	Botetourt	Truck Weighing Station 9.34 Mi. N. of Roanoke-Botetourt Co. Line
50	1953-02 (T.&P. 95)	Loudoun	Truck Weighing Station 5.60 Mi. E. of E. C. L. Middleburg
623	1318-02	Charles City	Widening Bridge over Tomahund Creek 1 Mi. from Rustic
636; 638; 689	1388-01-05-04	Spotsylvania	4.30 Mi. Bit. Surf. Treat. Int. Rt. 1 (Near Four Mile Fork)— Int. Rt. 51
675	1370-01	Patrick	4.92 Mi. 14' x 6" Stab. Base S. T. Int. Rt. 773 at Ararat— Int. Rt. 677
638; 642	1376-05	Pr. William	3.40 Mi. 16' x 6" Stab. Base, S. T. Int. Rt. 1— Int. Rt. 640 (Bethel)

OFFICIAL PROPOSALS

Route	Project	County	Description
743	1338-02	Grayson	3.62 Mi. 16' x 6" Stab. Base, S. T. 0.01 Mi. S. of Rt. 58— 0.004 Mi. N. of N. C. State Line
735	1358-08	Mecklenburg	1.66 Mi. 16 x 6" Stab. Base, S. T. Int. Rt. 58 (Near Buffalo Springs)— Int. Rt. 602 (White House)

The Following Projects Will Be Received on September 20, 1950.

1	1658-01	Mecklenburg	8.88 Mi. Var. Pl. Conc Widening Bit. Top Virginia-N. C. Line— 0.18 Mi. N. of Int. Rt. 58
460	1906-02	Appomattox	5.84 Mi. 24' x 8" & Widening W. B. Mac. H-2 Top 0.01 Mi. W. Int. Rt. 24 at Appomattox— 1.89 Mi. E. N. & W. Underpass at Concord
46	6812-01-02; 1146-SW2	Brunswick	1.47 Mi. 5' x 4" Conc. Sidewalk & Incidentals 0.06 Mi. S. of N. C. L. Lawrenceville— 1.42 Mi. N. of N. C. L. Lawrenceville
60	2124-02	Cumberland	2.92 Mi. 22' x 6" W. B. Mac., S. T. 2.60 Mi. W. of Cumberland C. H.— 5.55 Mi. W. of Cumberland C. H.
259	5282-01-02-03	Rockingham	192'-2" Br. over Linville Creek and Approaches 0.08 Mi. E. of W. C. L. Broadway— 0.571 Mi. E. of W. C. L. Broadway
23; 78	3897-01; 3297-01-02-03-04-05-06	Wise	4 Bridges, Approaches & Incidentals (0.65 Mi.) W. C. L. Appalachia— 2.74 Mi. N. of N. C. L. Appalachia
620	1346-01-02	Isle of Wight	6.15 Mi. Bit. Surf Treatment 0.02 Mi. E. Southampton Co. Line— 2.20 Mi.W.Int. Rt. 627 (Foursquare)
601	1316-08	Caroline	1.56 Mi. 14' x 6" Stab. Base Int. Rt. 658 (Near Coffey Corner)— N. End Bridge over North Anna River
626	1362-03-04	Nelson	7.97 Mi. 14' x 6" Stab. Base, S. T. & Bridge Int. Rt. 56 (Near Midway Mills)— S. End Br. over Rockfish River Br. (Near Howardsville)
610; 647	1323-02	Culpeper	4.59 Mi. 16'-14' x 6" & 16' x 5" Stab. Base, S. T. Int. Rt. 3 (Lignum)— 0.13 Mi. E. Int. Rt. 731 (W. of Richardsville)
600	1337-02	Goochland	4.66 Mi. 16' x 6" Stab. Base, S. T. or Alts. Int. Rt. 6— Int. Rt. 643 (S. o Three Square)
679; 615	1386-01-03	Smyth	1.33 Mi. 16' x 6" & 14' x 6" Stab. Base, S. T. 0.04 Mi. S. Int. Rt. 11 (Greseclose)— 0.03 Mi. S. Int. Rt. 616
734	1353-01-03	Loudoun	7.38 Mi. 14' x 6" Stab. Base, S. T. Int. Rt. 50 (W. of Aldie) —Int. Rt. 719 (Airmont)

Plans and specifications are on file at the Richmond and Local District Office. Proposal guaranty shall be certified check or bid bond in the amount shown in schedule on back of proposal form. Bid Bond to be on form furnished by the Virginia Department of Highways. The Commission reserves the right to reject any or all bids.

Bids: September 19, 1950 (953)

Repaving Roadway

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 25, SECTION 17C

Repaving Northbound Roadway on Route 25, Section 17C, between East Grand Street and Anna Street, City of Elizabeth, Union County. Length 0.205 mile.

Estimated:

3,700 sq. yds. Pavement Excavation
3,700 sq. yds. 10" Rein. Conc. Pavement Surface
1,200 lin. ft. White Conc. Vertical Curb

Bids for the above will be received at the office of the State Highway Department, Room 140 in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. on Tuesday, September 19, 1950, at ten o'clock (10:00 A. M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A. M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provision of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bids, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: September 19, 1950 (955)

Sewage Collection System and Lift Pump Stations

CITY OF PORT ARTHUR, TEXAS

Public notice is hereby given that the City of Port Arthur, Texas, will receive bids on September 19, 1950, at 9:00 A.M. at the office of the City Clerk in the City Hall, Port Arthur, Texas, for the construction of a Sewage Collection System in the North Port Arthur area and in the area east of DeQueen Boulevard; also the construction of four Sewage Lift-Pump Stations.

The Sewage Collection System will be divided into four separate contracts.

(a) Area north of Lakeview and east of W. C. I. D. No. 4.

(b) Eighth Avenue system south of Kansas City Southern.

(c) Six-inch and eight-inch feeders. Two mains on Eighth Avenue System North of the Kansas City Southern Railroad.

(d) Mains on Eighth Avenue System north of the Kansas City Southern.

Total length of all mains and laterals, 85,000 feet.

Bidders may bid on any or all of these contracts.

Plans and specifications are on file in the office of the City Engineer at City Hall and at the office of P. Shultz' Sons, Sanitary Engineers, 1322-13th Street, Port Arthur, Texas; and may be had for the deposit of $10, which will be returned to the bonified bidder. Also on file at the Texas Contractors, 309 Thomas Building, Dallas, Texas; and A. G. C., 2103 Crawford Street, Houston, Texas; and the Dodge Reports, M. & M. Building, Houston, Texas.

The City of Port Arthur reserves the right to reject any or all bids and to waive formalities. In case of ambiguity or lack of clearness in stating the prices in the bids, the City reserves the right to consider the most advantageous contracts thereof. No bid may be withdrawn within thirty days after the bids are received. The successful bidder will be required to furnish a Performance Bond in the amount of at least 100 per cent of the total contract price as awarded. A Cashier's Check or Certified Check on a solvent, Jefferson County bank equal to at least 5 per cent of the maximum total amount of any combination of bid items (Certified Checks must be made payable to the City of Port Arthur) shall accompany bids.

CITY OF PORT ARTHUR
Ernest W. Meyer
City Clerk

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • **OPPORTUNITIES** • EQUIPMENT—USED or RESALE

THE AUSTIN COMPANY

Invites Applications From Capable Engineers and Draftsmen

Opportunities are being offered to Engineers and Draftsmen who can design and/or prepare engineering drawings for industrial buildings and their facilities. Assignments are not for specific projects but are in our regular engineering staffs in long-established offices located on the East Coast, Central West, Gulf Coast, and West Coast. Good working conditions. Established vacation and sick leave plans, also paid holidays.

Positions are open to men possessing a sound background of education and experience and qualifying in—

DESIGNERS—Office buildings, laboratories, and industrial buildings. Positions require those possessing vision and creativeness.

STRUCTURAL—Industrial buildings and miscellaneous structures of steel and reinforced concrete.

MECHANICAL—Heating, air conditioning, ventilation systems, process piping, conveying systems, plumbing, sewer, and sprinkler systems.

ELECTRICAL—Industrial lighting and power distribution, and controls.

DETAILERS—Draftsmen experienced in the preparation of steel details for shop fabrication of industrial building frameworks.

Full particulars as to education, experience, and compensation desired should be given in first letter.

NATIONAL HEADQUARTERS

16112 Euclid Avenue — Cleveland 12, Ohio

ESTIMATOR or COST ENGINEER

wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
Canadian Brazilian Services, Ltd.
Yonge & Gerrard Sts.
Toronto, Ontario, Canada

ESTIMATORS OR COST ENGINEERS

WANTED — Experienced mechanical and civil engineers for estimating, familiar with present day costs; capable of preparing comprehensive and complete estimates for commercial and industrial building; age, 30 to 40 years.

Complete information must be furnished. Write or apply to Ford Motor Company, 3000 Schaefer Road, Salaried Personnel Department, Dearborn, Michigan.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and Chemical engineers preferred. Permanent. Openings in United States and Canada. P-7287, Engineering News-Record.

CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridge piers and their foundations and mass concrete such as dams, require A No. 1 thoroughly experienced estimator familiar with present-day costs capable of preparing comprehensive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-6974, Engineering News-Record.

DESIGNING ENGINEER experienced in steel and concrete bridges and structures. Must be capable of assuming responsibility. Salary and bonus. Submit complete data on education and experience. P-7191, Engineering News-Record.

MECHANICAL DRAFTSMEN: Must be experienced in power plant layout, piping, steel work, coal conveyors, and other power plant equipment, for employment in Milwaukee area. In your reply, furnish details on experience and qualifications, age, salary required, etc. Employment Office, Wisconsin Electric Power Company, 231 West Michigan Street, Milwaukee 3, Wisconsin.

(Continued on the opposite page)

SALES AGENTS FOR CONCRETE EQUIPMENT MANUFACTURER

National manufacturer of concrete construction forms and accessories desires to open branches in the following areas:
MEMPHIS — ALBUQUERQUE
KNOXVILLE · NASHVILLE
ATLANTA · BIRMINGHAM
CHARLOTTE, N. C.

Must be aggressive, successful salesman between ages 30 and 45 with General Contractors contacts. Must have thorough engineering and construction sales experience preferably with C. E. degree.

This is an opportunity for a qualified man to make a lifetime connection. We are AAA-1 manufacturer, leaders in our field. Opportunities for advancement are unlimited.

Please write in confidence, giving full information regarding education, past employment and past earnings. If possible, please enclose snapshot.

RW-7601, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

CITY OF DETROIT

Engineers experienced in the design and construction of water works needed for $38,000,000 project. Starting salary $4,067; $4,809; $5,580; $6,430 per year with annual increases. Submit resume of experience with application request.

Detroit Civil Service Commission
1501 Water Board Bldg.
735 Randolph Street, Detroit 26, Mich.

ELECTRICAL ENGINEERS

Graduates, experienced in design engineering and economic studies of steam-electric power plants and high voltage substations. Also, knowledge of power system relaying and preparation of specifications for switchboards and switchgear.

P-7541, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITION VACANT

(Continued from opposite page)

WANTED-CONSTRUCTION Superintendent for reinforced concrete hospital building in Eastern Pennsylvania. Give experience record, education, age, references and salary desired. P-7489, Engineering News-Record.

CONSTRUCTION PROJECT Manager—Experienced on large scale industrial and commercial construction and waterworks projects. Write giving detailed account of experience over past 15 years. P-7495, Engineering News-Record.

OFFICE MAN—Good draftsmen, some field work necessary. Prefer graduate with 5 years experience interested in sanitary and water supply engineering. Location Pittsburgh, Pa. P-7523, Engineering News-Record.

WANTED: HIGH-Class Draftsmen, structural and industrial. Also, experienced structural designers in steel or reinforced concrete. Also, concrete detailers. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

INSPECTORS OR Engineering Aids for Field and laboratory; experienced in field control of asphalt, concrete, and soils. Give age, qualifications and salary desired. Toledo Testing Laboratory, Toledo, Ohio.

WANTED IMMEDIATELY—Graduate C.E. for permanent position—experienced in municipal engineering — salary range 300-350 — location in Southeast—send full details. P-7589, Engineering News-Record.

HELP WANTED-ESTIMATOR. Large Construction Company desires man approximately 35 years of age with Civil Engineering or Architectural Training, experienced in quantity survey work and general office expediting. Permanent position for right man. Write stating age, experience and salary desired. P-7592, Engineering News-Record.

SANITARY ENGINEER, preferably between ages 25-40—must be capable of assuming responsibility for design of structural and sanitary facilities for city of 20,000 population. State salary requirement and date of availability. P-7585, Engineering News-Record.

TRACK ENGINEER, some supervisory experience in laying and maintaining railroad track. Under 35 years of age. Philadelphia area. Reply giving age, experience and education. P-7621, Engineering News-Record.

ESTIMATOR FOR well established New York general contractor, operating in NYC, upstate NY and NJ—private and public building and heavy construction. Please give outline of experience, age, education, references, salary expected and when available. P-7614, Engineering News-Record.

SHOP FOREMAN—Thoroughly experienced on tractors. Capable of handling men. Unlimited opportunity to right man. Metropolitan area. Write full details experience, etc. P-7616, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

FIELD ENGINEER, industrial construction layout, private surveys, drafting, computing. PW-7503, Engineering News-Record.

CONSTRUCTION MANAGER AVAILABLE

Experienced general construction man seeks General Contractor requiring services of a Construction Manager for large projects or joint ventures. Foreign or domestic. Highest references.

PW-7540, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

ENGINEER-SUPERINTENDENT. College and 14 years experience. Presently employed for four years in Constr. and rehabilitation of industrial buildings. Experienced in municipal engineering, mining, dock and harbor construction and general contracting. Three years with operation, maintenance, and shipping of all kinds of heavy construction, equipment. Machinist while attending college. Married, no children. Travel anywhere. Home in N.E. New Jersey. Available one month after hiring. PW-7552, Engineering News-Record.

CONTROLLER-OFFICE Manager. Heavy construction contractor. Accounting, Systems, Costs, Taxes, Insurance, Payrolls, Main, subsidiary and Joint Venture accounts. 15 years complete charge. Handled 20 million dollar a year volume. College Grad. Will relocate. PW-7547, Engineering News-Record.

SPECIFICATION WRITER Available. 20 years extensive experience with prominent Architects and Engineers in Los Angeles, Chicago and Detroit areas. School plant, hospital, commercial, industrial, large scale public and private construction. Fast and accurate, will handle large volume of work. Presently 5 years on West Coast. PW-7556, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT or Manager: Available for foreign or domestic work. Over 30 years experience all types construction projects; airports, hospitals, housing and power plants. Highly successful in handling labor relations problems. PW-7522, Engineering News-Record.

ESTIMATOR-BLDG. CONSTRUCTION. Take off, pricing on all types of jobs. Project Management, Buying, Contracts. Experienced, energetic. PW-7594, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, heavy grading projects, earthfill dams, highways, airports, flood control, incidental concrete. Thorough knowledge of equipment and maintenance. Can estimate for bidding purposes aforementioned work. Handle any size project from beginning to end. References and projects built over past 18 years furnished. PW-7596, Engineering News-Record.

CIVIL ENGINEER; Jun. ASCE; Married; 24; BS Purdue University; Registered Indiana, Puerto Rico; 27 months responsible charge of construction and maintenance of roads, buildings and irrigation structures on 6,000 acres of cane land, design, planning, supervision. Knows irrigation layout, surveying; speaks Spanish; location optional. PW-7610, Engineering News-Record.

SELLING OPPORTUNITY WANTED

YOUNG COMPANY in the Construction Machinery business looking for connection as Factory Representative in Midwest working out of Detroit, Michigan. RA-7581, Engineering News-Record.

CONTRACT WORK

Civil Engineering firm

located in Western Pennsylvania has competent Registered staff and floor space available to handle sub-contract design work in the heavy construction category. Inquiries invited. CW-7576, Engineering News-Record.

ESTIMATING SERVICE

Any Trade and Type of Project

Literature and Sample on request

Construction Survey Cooperative

101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 **Founded 1922**

SUBMERGED PIPE LINE CONSTRUCTION

BOYCE COMPANY

Phone 3-2530 **Clearwater, Fla.**

WE OFFER

GRADUATE ENGINEERS

Civil Mechanical Electrical Chemical

Available for Duty in Latin America

U. S. Trained.
English and Spanish Speaking.

Adapted to Working and Living Conditions in Latin American Countries.

Please write to:

Institute of Engineers of Puerto Rico

Box 3392 **San Juan, P. R.**

INVITATION

to U. S. MANUFACTURERS OF LIGHT BUILDERS' & CONTRACTORS' PLANT.

Chairman of Directors of well-known firm of Portable Contractors' plant manufacturers visiting the U.S.A. September, wishes to contact firms manufacturing light Builders' and Contractors' Plant with a view to manufacturing their lines in Great Britain on a royalty basis. References available from U.S.A. firm with which we already operate on similar arrangement.

Full details in first instance, to Alfred Johnson, c/o Messrs. Johnson Wire Works Ltd. De Courcelles St., Henri, Montreal, Canada.

WANTED SUB-CONTRACTS

For structural steel and reinforced concrete design or steel detailing, by Midwest Consulting Engineering Firm. Work to be done in our offices.

CW-7424, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

SURPLUS FOR SALE

60 MBM ROUGH LUMBER

¾ BUCKEYE SHOVEL

1947—one attachment $8000.00

MALOY, DUGAN & MALOY, Inc.
Shaker Road, West Albany, N. Y.

FOR RENT

20-10 TON TO 25 TON CAPACITY

TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

30 TON TO 50 TON CAPACITY

SECTIONAL BOOM LENGTHS TO 175 FEET

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.

Branches: **SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.**

FOR SALE

30 Ton Electric Gantry Crane
60 Ton Per Hour Asphalt Plant
3-W Monaqahan Dragline, Diesel Electric
100 Ton Capacity Derrick Scow
900-500-315 Ft. Air Compressors
Lorain Dragline Model L-820
25 to 50 Ton Whirleys, Steam Power
5 Compt. Bin and Concrete Plant
Wide Gauge, all electric, 2 Yd. Crane
6 7 8 Yd. Walker Type Draglines
Locomotive Cranes, Steam, Gas, Diesel Power
25 Ton Manitowoc Model 3000-B
10 Ton Truck Crane Tandem Drive
150 Ton 3 Compt. Bin Batcher Scale

"STONE THE CRANE MAN"
1132 Prudential Bldg. Buffalo 2, N. Y.

WANTED

THE VILLAGE OF SOUTH ORANGE

PUBLIC SALE

On September 18, 1950 at 3 o'clock P.M. D.S.T., at the Village Hall, South Orange, N. J., the purchasing agent of the Village of South Orange will offer for sale two (2) Ingersoll-Rand Air Compressors, as follows:

Compressor No. 1
(74748-74749)

Compressor No. 2
(74746-74747)

Name of manufacturer.....Ingersoll-Rand Co.

Type....."Imperial" type XRE-2 compressor having compound, two-stage air cylinders; direct connected to a 100 H.P. synchronous motor, unity power factor, 50 degree "C", 440 volt, 3 phase, 60 cycle, with exciter, including starting panel.

277 revolutions per minute.

490 cu. ft. piston displacement.

410 cu. ft. air delivered per minute.

83 rated horsepower.

Size of cylinders 9 x 10 and 14 x 10.

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Year purchased and installed new.....1927
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The compressors will be sold "as is", and "where is" without warranty or guaranty that the same are in any condition or fit to be used for the purpose for which they were intended, and no claims for allowance upon any of the grounds aforesaid will be considered after the bids have been received and accepted.

Bids will be accepted and considered for either one or both compressors.

Each bid must be submitted in writing and accompanied by cash or a certified check in the sum of not less than 25% of the total amount of the bid and made payable to The Village of South Orange, N. J. Payment of the balance must be made after a contract of sale has been awarded.

The compressors will be dismantled and placed outside the pumping station building under tarpaulin cover by the Village. The successful purchaser shall furnish all necessary labor, equipment, etc., for removing the compressors from outside the building at his own cost and expense.

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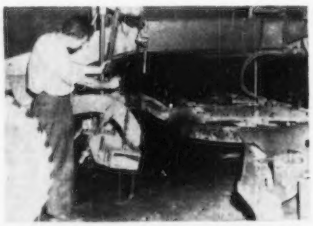

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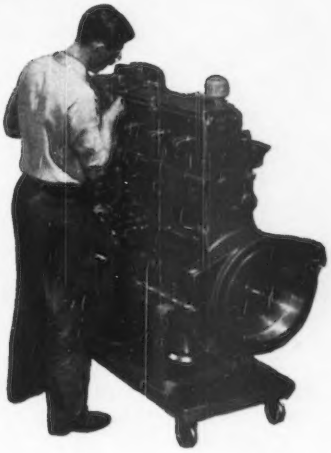

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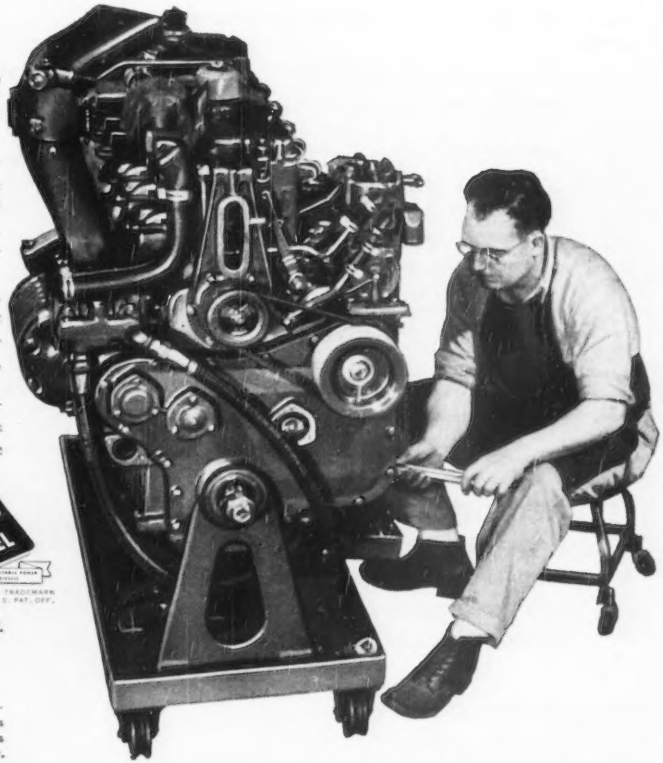

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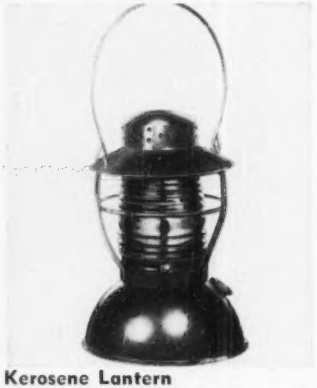

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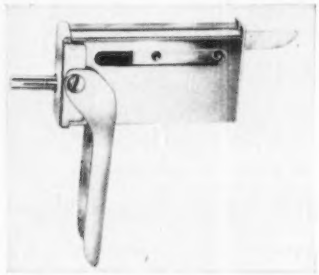

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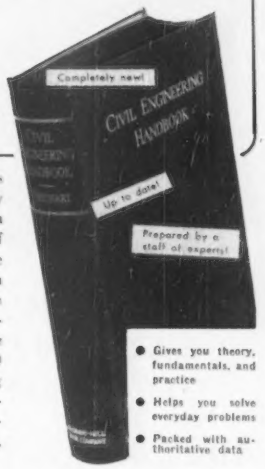

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TABLE OF ASTM A305 SPECIFICATIONS

		NOMINAL DIMENSIONS ROUND SECTIONS			REQUIREMENTS OF DEFORMATIONS		
Bar No. *	Unit Wt. Lbs. Ft.	Diameter-Inches Decimal	Cross Sectional Area Sq. Inches	Perimeter	Max. Avg. Spacing In.	Min. Height Inches	Max. Gap. Inches°
2†	0.167	0.250	0.05	0.785	.. ..	.. ..	.. ..
3	0.376	0.375	0.11	1.178	0.262	0.015	0.143
4	0.668	0.500	0.20	1.571	0.350	0.020	0.191
5	1.043	0.625	0.31	1.963	0.437	0.028	0.239
6	1.502	0.750	0.44	2.356	0.526	0.038	0.286
7	2.044	0.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
9‡	3.400	1.128	1.00	3.544	0.790	0.056	0.431
10‡	4.303	1.270	1.27	3.990	0.889	0.064	0.487
11‡	5.313	1.410	1.56	4.430	0.987	0.071	0.540

*Bar numbers are based on the number of ⅛ inches in the nominal diameter of the section.
†Bar number 2 in plain rounds only.
‡Bars numbered 9-10-11 correspond to former 1" sq., 1⅛" sq., and 1¼" sq. sizes, and are equivalent to those former standard bar sizes in weights and nominal cross-sectional areas.
°Chord of 12 ½% of Nom. Perimeter.

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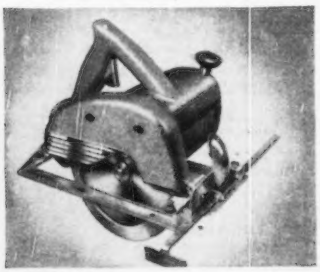
controller for feeders. Two models are available—one for use with 5 to 75-hp 220-v ac motors; the other, for 5 to 150-hp 440-v ac motors.—TECHNALECTRIC CO., 445 FOLSOM ST., SAN FRANCISCO 5, CALIF.

Extension-Cord Reel

Heavy-duty cord reel is furnished with either 25 or 45 ft of rubber-covered cord. Free-moving swivel is designed to prevent binding. The reel has a constant retracting speed, and will lock or release at any cord length.—INDUSTRIAL PRODUCTS CO., 2715 N. 4th ST., PHILADELPHIA 33, PA.

Heavy-Duty Truck Diesel

Diesel engine is suitable for operation in all kinds of trucks and tractors carrying gross loads up to 52,000 lb. The Model 6-DTS-468 is a supercharged diesel developing 152 hp and a maximum torque of 370 lb/ft at 1,600 rpm. It is a 6-cyl full-diesel solid-injection type. Length from flywheel housing to front of fan is 47⅞ in.; width at widest point is 29½ in. —THE BUDA CO., HARVEY, ILL.



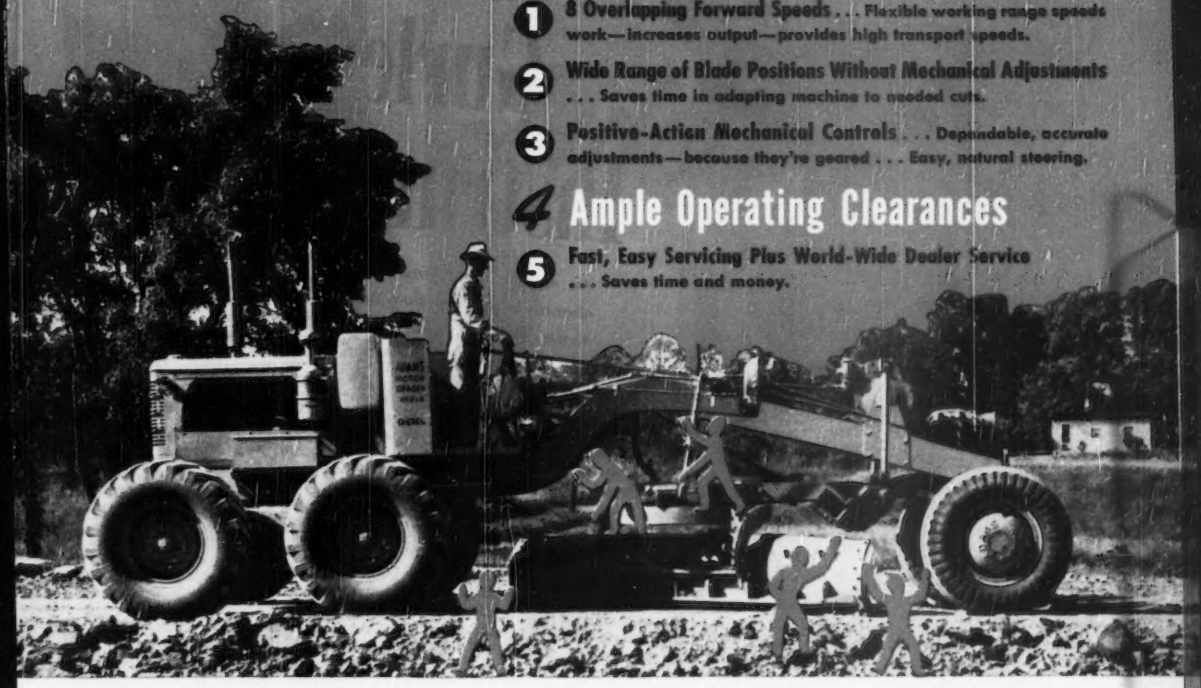
Electric Hand Saw

Light weight and ease of handling are features claimed for the Zephyr Model 625 portable, electric hand

(Continued on page 121)

Only Adams

gives you this exclusive combination of advantages



1. **8 Overlapping Forward Speeds . . .** Flexible working range speeds work—increases output—provides high transport speeds.
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Blade clearance—plenty of it, in the right places—is essential to fast, efficient blade positioning. That's why Adams Motor Graders are designed and built with an abundance of blade clearance at these critical points:

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- **Between Blade Assembly and Frame:** Adams arched frame permits higher blade lift—better clearances in coming out of ditches and in getting over sharp-angle approaches to bridges and rail crossings.
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Make your next motor grader an **Adams**

LEADING TECHNICAL PUBLICATION ANALYZES WHY GURLEY ALUMINUM TRANSITS ARE ACCURATE, STRONG, LIGHT, VIBRATION-FREE

The full-length article from which this is reproduced appeared in MODERN METALS. Reprints are available on request.

Gurley Instruments

An article describing the advantages of aluminum construction of Gurley instruments where accuracy, strength, lightness and freedom from vibration are essential.

Probably the controlling incentive in the application of aluminum alloys to surveying instrument construction has been the prospect of weight reduction. Consider the labor to be saved by a surveying party which has to carry these instruments about, day after day, often over rough country, when the weight can be reduced by at least one-third.

A comparison of the mechanical properties of the aluminum alloys with those of the other non-ferrous alloys commonly used in the making of surveying instruments is greatly in favor of the light weight metal. The remarkable feature of these strong aluminum alloys is their high yield point in relation to their ultimate strength, especially those in the fully heat treated condition. They are also very rigid and hard.

Some aluminum alloys are suitable for die-casting. Special bearing metals can be inserted in the molds and cast integral with the structural parts. In no other way have bearing metals and structural metals been so effectively and economically combined. A further result of the use of aluminum alloys through this method of manufacture is a decrease in the number of parts. Minor assemblies have been combined into single parts, permitting more accurate manufacture and insuring a permanence of adjustment of these parts in service. The latter feature is doubly true, since the aluminum alloys differ from other materials of instrument construction in that they do not "grow" nor distort with age.

The non-corrosive and non-tarnishing qualities of aluminum furnish added inducements to their application in the construction of precision instruments. This has led to their substitution for silver on accurately graduated circles and verniers. Burnished aluminum does not blacken when in contact with sulfurous gases frequently found in the atmosphere of mines and industrial districts.

Tests with transits made from aluminum alloys have shown, not only greater structural strength and durability, but greater stability under conditions which induce vibration. That this should be so is readily apparent, since the light weight greatly reduces the momentum of the instrument and consequently the amplitude of vibration.

Gurley transits constructed of the light alloy metals have been used on all kinds of work, meeting successfully the requirements of durability where Transits receive exceedingly rough handling; permanence of adjustment where they are transported over rough roads; a high degree of accuracy where the work is such as to require especially fine graduations; and economy where serious accidents occur which necessitate repairs. Taken all together Gurley's experience with aluminum, covering a period of over 74 years, has been entirely satisfactory and their use of these modern materials is becoming more and more appreciated by the field engineers.

Gurley Transits are guaranteed because: they are engineered and manufactured to exacting standards; all parts are made in the Gurley plant (including all optical components); they are the products of continuous instrument research for more than 104 years.

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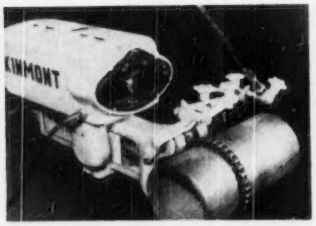
saw. Shoe permits depth of cut from 0 to 2¼ in., and angular cutting adjustment from 90 to 45 deg. Saw is supplied with a 6½-in. combination blade. No-load speed is 5,200 rpm.—PORTABLE ELECTRIC TOOLS, INC., 320 W. 83rd ST., CHICAGO 3, ILL.



Pipe-Scarfing Attachment

Cutting or scarfing of pipe or tanks is simplified by an attachment for use with the Kinmont universal power unit. This accessory cuts accurately as the material is being turned by the power unit. Provision is made for vertical and horizontal adjustment of the cutting torch. Protractor dial provides for angular adjustment.—ROYLYN, INC., 718 W. WILSON AVE., GLENDALE 3, CALIF.

Concrete-Floor Enamels

Chemically inert enamels resist action of mold growth, gases, and chemicals which ordinarily deteriorate concrete floors and walls. Applicable by brush, average coverage of Hysol enamels is 350 sq ft/gal. A solution of inert synthetic resins, it has high thermal and chemical stability and is resistant to wear and abrasion.—HOUGHTON LABORATORIES, OLEAN, N. Y.

Ribbed-Design Safety Hat

High impact resistance is built into this 12-oz aluminum-alloy Hard Boiled safety hat. Ribbed designed is said to result in high strength while the crown remains resilient to absorb impact. Inner hat assembly is designed to absorb shock with full-floating 6-point-suspension hammock. Headbands and hammocks are fully adjustable.—E. D. BULLARD CO., 275 EIGHTH ST., SAN FRANCISCO 3, CALIF.

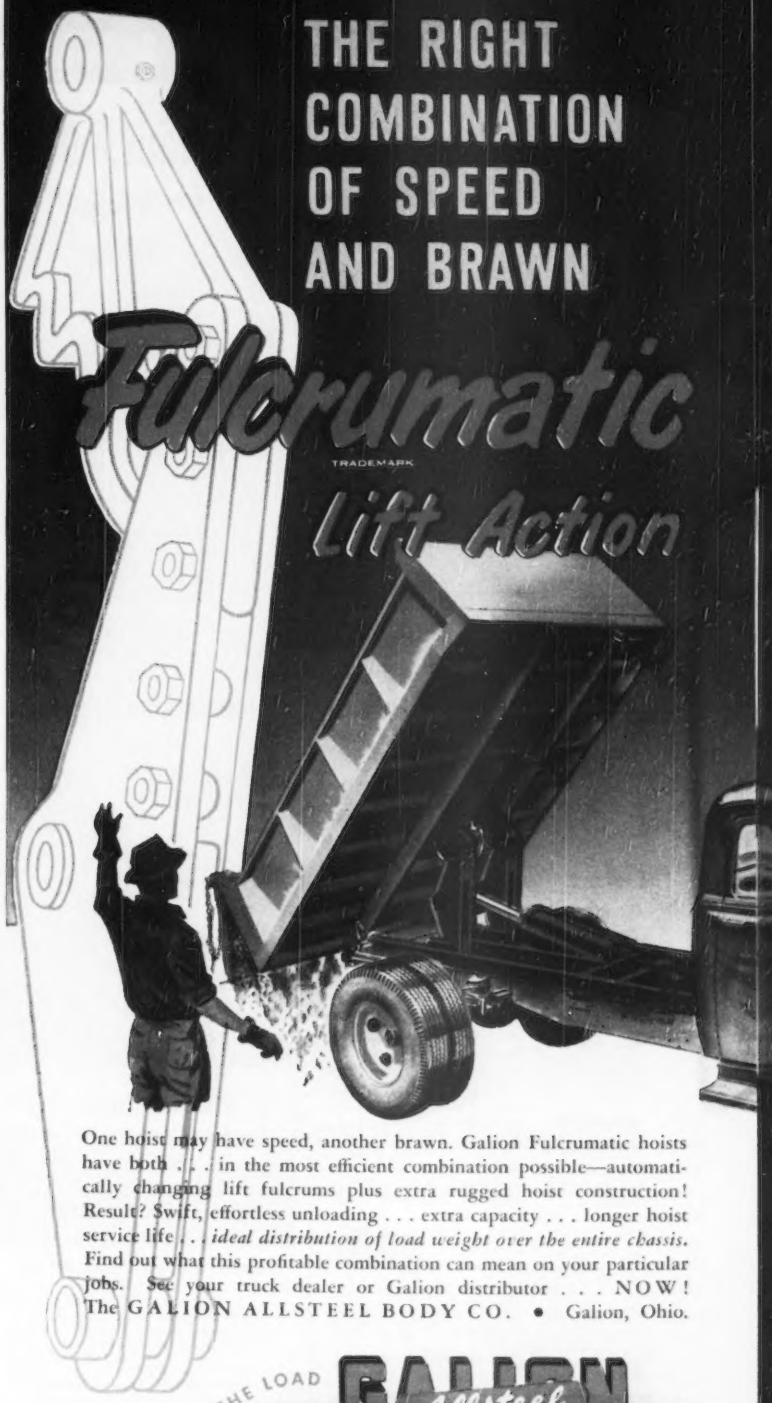
Improved Fire Hose

Blazeguard fire hose is said to occupy up to 30 percent less space. It

(Continued on next page)

THE RIGHT COMBINATION OF SPEED AND BRAWN

Fulcrumatic TRADEMARK Lift Action



One hoist may have speed, another brawn. Galion Fulcrumatic hoists have both . . . in the most efficient combination possible—automatically changing lift fulcrums plus extra rugged hoist construction! Result? Swift, effortless unloading . . . extra capacity . . . longer hoist service life . . . *ideal distribution of load weight over the entire chassis.* Find out what this profitable combination can mean on your particular jobs. See your truck dealer or Galion distributor . . . NOW! The GALION ALLSTEEL BODY CO. • Galion, Ohio.

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Sauerman LONG RANGE MACHINES

Sauerman Scraper with rapid shifting device at tail end, makes deep cut into hill, moves earth 400 ft. and dumps into hopper at rate of 2,000 cu. yd. a day.

Sauerman Slackline Cableway digs deep, wide pit and moves 30 to 40 loads of wet material hourly to top of screening plant.

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at lowest cost!

MANY problems in earth moving and stockpiling can be simplified and a great deal of money saved by using either a Sauerman Power Scraper or Slackline Cableway which digs, hauls and places materials in one operation.

First cost of a Sauerman machine is reasonable, maintenance expense is small, and the simplicity of operation permits easy one-man control of even the largest installation.

This equipment is flexible and is readily adapted to meet new conditions. Sizes range from small portable units designed for cheap handling of a small hourly yardage up to powerful machines that will move as much as 600 cu. yd. per hour of tough materials.

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KEEP YOUR CONVEYOR BELTS GOING

FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. Their use saves expensive replacements and extended shutdowns.

FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.

● Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco belt fasteners. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco. Also illustrates step by step the latest practice in repairing rips and putting in patches.

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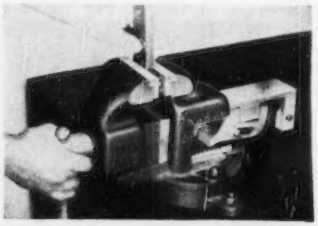
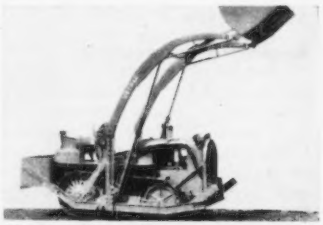
is a flatter-folding cotton-rubber-lined hose with single and double jacket. Blazeguard has high tensile strength and durability. — APPROVED EQUIPMENT MFG. CO., INC., 330 MAIN ST., NEW MILFORD, N. J.



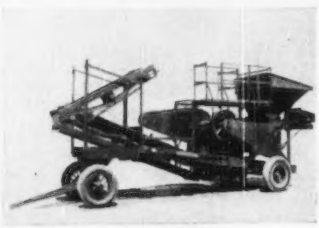
Quick-Acting Vise

Fast slide action on Dodge vise eliminates spinning of handle through long distances. The instant-slide action is said to result in higher production, reduced operator fatigue, and increased efficiency. Non-pinch handle on the Slide-Set vise protects operator. The vise is provided with either swivel or stationary base.—DODGE MFG. CORP., MISHAWAKA, IND.



Narrow-Gage Tractor

Ustrac crawler-type tractor is 37 in. wide. It has a drawbar horsepower of 20.4. Front-end hydraulic loader has a ¼-yd capacity. It is easily converted to use with a bulldozer. Ustrac has 4 speeds forward plus instant reverse.—FEDERAL MACHINE & WELDER CO., TRACTOR DIVISION, WARREN, OHIO.



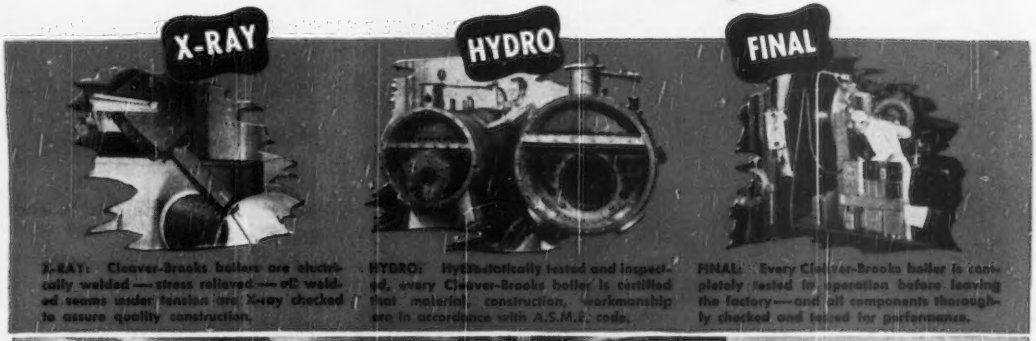
Single-Pass Portable Plant

Low-cost single-pass-type Model 6 crushing plant consists of a mechanical feeder, 2x3 ft two-bearing vibrating screen, and a 1016, 1020, or 1024 roller-bearing jaw crusher. Gathering conveyor, which blends materials from the screen and crusher, is built into the plant. It can be used to load

(Continued on page 124)

FACTORY-TESTED AND JOB-TESTED

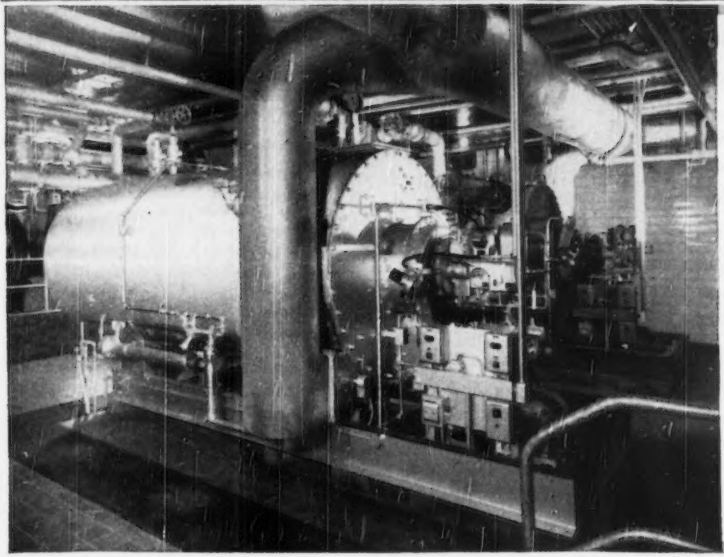
. . . Another Reason Why You Get A Greater Return From Your Investment In A Cleaver-Brooks Steam Boiler



X-RAY: Cleaver-Brooks boilers are electrically welded — stress relieved — all welded seams under tension are X-ray checked to assure quality construction.

HYDRO: Hydrostatically tested and inspected, every Cleaver-Brooks boiler is certified that material, construction, workmanship are in accordance with A.S.M.E. code.

FINAL: Every Cleaver-Brooks boiler is completely tested in operation before leaving the factory — and all components thoroughly checked and tested for performance.



Performance on Location:

Boilers are placed in operation by Cleaver-Brooks service representatives who check installation, operation and make a complete and detailed field report. Your operators are trained in care and operation by Cleaver-Brooks.

Exact and detailed testing—progressively—at successive stages in manufacturing and assembly—operation tests under load at the factory — plus final operation test on location in your plant — these are standard Cleaver-Brooks procedures to assure you in advance of peak performance.

Flexible Operation Burning Gas or Oil With Equal Efficiency: You can use oil, gas, or combination oil and gas, whichever is of lower cost. Through high heat transfer, Cleaver-Brooks boilers operate at a guaranteed efficiency of 80% from full load down to 30% of rating.

In addition, Cleaver-Brooks boilers give you clean, smokeless operation—eliminate fuel—ash handling —require no high or costly stacks— no special foundations — fit under low headroom—provide quick steaming, flexible operation to meet fluctuating loads—fully meet all codes.

Available in sizes 15 to 500 H.P., 15 to 200 P.S.I. — write for new Cleaver-Brooks steam boiler catalog.

CLEAVER-BROOKS COMPANY, 389 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver-Brooks

STEAM BOILERS

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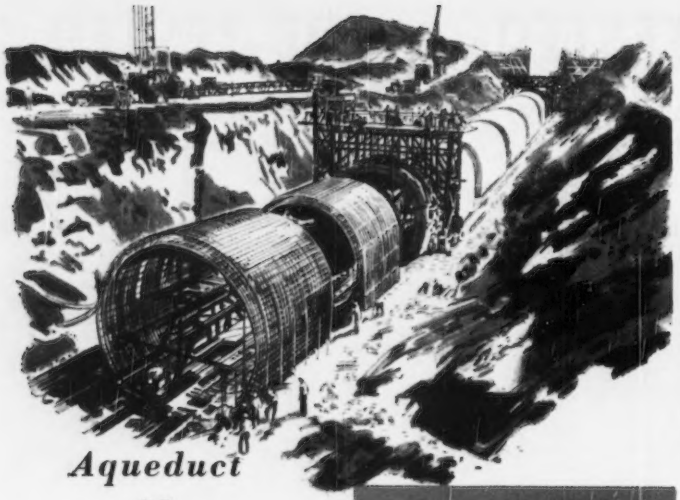
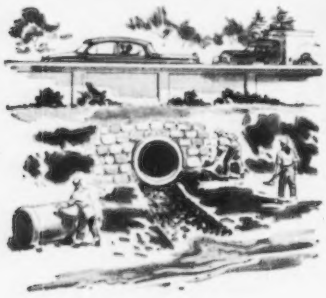


Aqueduct or Storm Sewer



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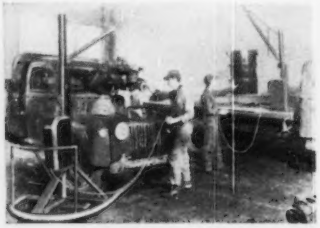
trucks, or to deliver to bin or stock pile. V-belts drive crusher and screen. Entire plant is mounted on a two-axle chassis equipped with pneumatic-tired wheels. A semi-trailer hitch is available. — PIONEER ENGINEERING WORKS, 1515 CENTRAL AVE., MINNEAPOLIS 13, MINN.



Electric Shop Hoist

Electric hoist, designed for one-man operation, will hoist, lower, stop, and hold weights up to 2,000 lb. The Lift-All operates on its own shop dolly, or from a truck bed. Power is provided by a 6-v automotive battery. The drum has a 40-ft length of ¼-in. 6-strand steel cable.—LIFT-ALL EQUIPMENT CO., 400 N. E. 97th AVE., PORTLAND, ORE.

New Product Briefs

Reduction pulley is a speed reducer built inside a V-belt pulley. The planetary gears used provide built-in reduction from 4.7:1 to 36.5:1. Manufactured by: Hart Reduction Pulley Co., Milwaukee 3, Wis.

Cork-faced bulletin board has an overall size of 27x40 in. It has a hardwood frame. Manufactured by: Industrial Products Co., Philadelphia 33, Pa.

Sensitive lightmeter measures street-lighting illumination levels. The Model PF-13 takes readings from 0 to 1 footcandle and from 0 to 5 footcandles. Manufactured by: General Electric Co., Schenectady 5, N. Y.

Fire-protection system has a photoelectric unit which "sees" fire, and is not dependent on heat, smoke, or other indications. Manufactured by: Fireye Corp., Cambridge 42, Mass.

Pull-in elbow is available for running conduit around sharp corners without forcing or damaging the wires. Manufactured by: Gedney Electric Co., New York, N. Y.

Tensilend electrodes eliminate preheating, even when welding in below-freezing temperatures. Produced by: Arcos Corp., Philadelphia 43, Pa.

Manufacturers' Publications

Soil Stabilization—Simple, economical method for quickly stabilizing soft marshy ground is described in a new folder. Recommended for use where a road, airport, or earth dam is to be built, the folder explains how the Sand-Drain method was originated and refers to many successful applications. The method of draining water from soil to be treated is fully described, together with an explanation of the equipment used.—McKiernan-Terry Corp., Dept. 17, 15 Park Row, New York 7, N. Y.

Contractors Tools—Complete line of construction tools is described in Bulletin CT-750. The Structo line consists of moil points, chisels, drift pins, sledges and hammers, wrenches and tongs, pneumatic rivet sets, and air hammer tools. The bulletin lists dimensions and specifications for each item in the Structo line. — Arrow Tools, Inc., 1900 S. Kostner Ave., Chicago 23, Ill.

Grille-Selector Slide Rule—Rapid sizing of ventilating and air-conditioning grilles is possible with the B-C selector slide rule. Grille size is based on noise level, air volume, throw, and ceiling height. Table of maximum allowable noise levels for different installations is printed on rule face.—Barber-Colman Co., Uni-Flo Sales Div., Rockford, Ill.

Caterpillar Catalogs—Five new Caterpillar catalogs are now available. Bulletin 12933 discusses the advantages of properly zoning heavy earthmoving equipment for efficient production. Form 30018 is a large broadside discussing the advantages, and listing the specifications of, the D8 tractor. Form 30023 D016 describes the use of Caterpillar equipment in "beating back the snow". Bulletin 12678 discusses the advantages and features of the D7 tractor. Bulletin 12770 illustrates a few of the many construction jobs that feature the use of Caterpillar matched equipment. — Caterpillar Tractor Co., Peoria 8, Ill.

Construction-Equipment Lighting—Detailed report lists results of Corps of Engineers' study into night-work lighting systems for construction equipment. The report lists the advantages gained by proper placing of lighting equipment directly on construction units. It is illustrated with photographs of typical installations.

(Continued on next page)

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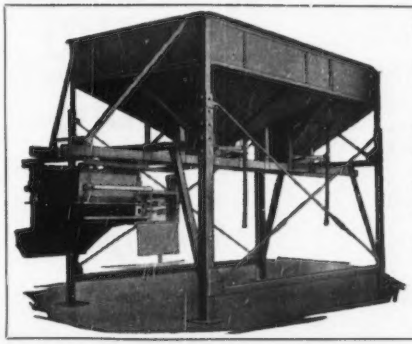

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The report also contains a large number of engineering drawings. Cost is $3.75.—Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C.

Red Lead Paints—Two fast drying red lead anti-corrosive paints of the vinyl and coumarone types are featured in Red Lead Technical Letter No. 5. The vinyl coating is especially adapted for steel surfaces exposed to fresh and salt water. It can be recoated in one hr. The coumarone paint is designed for use with continuously immersed piers, caissons, and other marine structures. It can be applied by brushing or spraying. — Lead Industries Assn., 420 Lexington Ave., New York 17, N. Y.

Welding Supplies—Directory (8 pp) lists a line of welding supplies. These include electrode holders, ground clamps, shields, welding cables, and other miscellaneous accessories. Also included is a listing of the various Lincoln electrodes. — The Lincoln Electric Co., 12818 Coit Road, Cleveland 1, Ohio.

Hardwood Flooring—Six educational folders and leaflets describe grading characteristics and list technical information pertaining to proper floor-laying procedures, outline specification data, and recommend uses of Northern hardwood flooring. These folders cover all phases of the subject, and are designed for use by contractors and architects.—Maple Flooring Manufacturers Assn., Box 678, Oshkosh 1, Wis.

Trenching Machines—Two new catalogs are available describing features and advantages of the Parson's Trenchliners. One bulletin describes the Model 310 for digging ditches 17 ft deep and 1½ to 6 ft wide; the other describes the model 221 for digging ditches 8½ ft deep and 16 to 36 in. wide. Both bulletins are thoroughly illustrated with on-the-job photographs showing operational features of the Trenchliners.—Parsons Co., Subs. of Koehring Co., Newton, Iowa.

Electric Motors—Polyphase motors in a range from 1 to 75 hp. are described in Bulletin EM4-812. Construction details are illustrated by cross-section and cutaway views. — A. O. Smith Corp., Motor Division, 5715 Smithway, Los Angeles 22, Calif.

Dual Crushing Plants—Portable plants for crushing, screening, and loading are described in Catalog 276. Illustrations show dual portable plants on

the job. A spread shows typical Telsmith combinations—which vary from the dual portable with plant-mounted feed hopper and truck loading conveyor to the dual portable combined with a complete washing and screening plant.—SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WIS.

Perlite Plaster, Concrete—Comprehensive data on perlite plaster and concrete are contained in two new reports. There reports list mix proportions in plaster, "k" factors, strength of concrete in several densities, and 17 detailed fire-resistance ratings determined by ASTM standard methods.—PERLITE INSTITUTE, 35 W. 53rd ST., NEW YORK 19, N. Y.

Foamglas Insulation—Installation and application of Foamglas insulation is illustrated and described in a 36-p booklet. Included in the booklet is information on the use of Foamglas as a wall lining, for erecting free-standing interior walls, and for ceiling insulation. Also listed are technical data, facts about PC accessory materials, and a description of the new line of trowel finishes that can be applied directly to PC Foamglas.—PITTSBURGH CORNING CORP., 307 FOURTH AVE., PITTSBURGH 22, PA.

Motor Grader—Model D 34.7-hp A-C motor grader is described in this 20-pager. A panel of 15 action pictures demonstrates the machine's versatility on construction and maintenance jobs including bank sloping, ditch pulling, shoulder work, scarifying, road maintenance, and several rear-end loader applications. — ALLIS-CHALMERS MFG. CO., TRACTOR DIV., BOX 512, MILWAUKEE, WIS.

Pressure-Treated Lumber—Service records of Wolmanized pressure-treated lumber are contained in a 44-p bulletin. This report, third in a series, brings up to date past records and adds many new installations to the file. The report, covering 25 years, cites case histories of more than 55,000,000 board feet of treated material.—AMERICAN LUMBER & TREATING CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL.

Welded Steel Tubing—Structural advantages, methods of fabricating and characteristics of welded steel tubing are discussed in a 12-p illustrated booklet. Sketches show how this material is used as a beam or column. The booklet outlines characteristics of tubing, and shows a variety of uses for tubing. — ARMCO STEEL CORP., MIDDLETOWN, OHIO.

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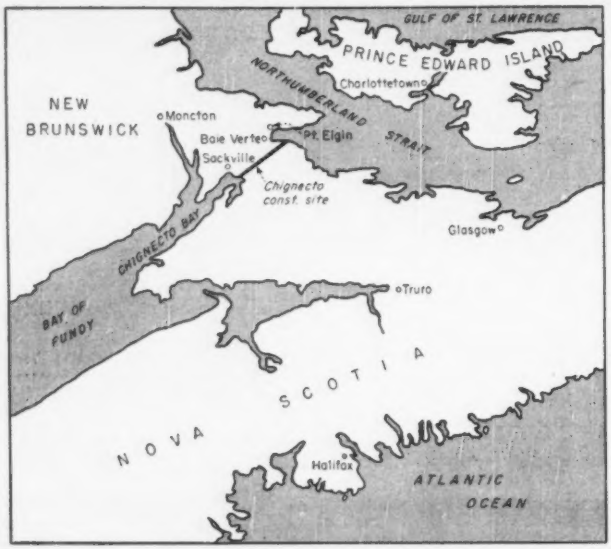
Letter from **OTTAWA**



. . . it's been a good idea from Louis XIV to St. Laurent . . .

Normally staid Ottawa is not accustomed—unlike other world capitals—to large delegations appearing in its legislative halls to urge action upon the Canadian government.

But a 250-year old dream recently brought 60 citizens of the four Maritime provinces (Nova Scotia, Prince Edward Island, New Brunswick, Newfoundland) for discussions with the Prime Minister and his cabinet.

At issue was the long-projected construction of the Chignecto Ship Canal—which might cost as much as $100,000,000—to cut through the narrow neck of land connecting the provinces of Nova Scotia and New Brunswick.

Such a canal would save more than 300 miles of the water distance between the mouth of the St. Lawrence River and U. S. coastal ports such as Boston or New York—a fact that holds large significance in view of the effort to develop vast iron-ore deposits in Labrador. It would make such New Brunswick ports as St. John more accessible to Canadian centers.

It would involve, however, one serious problem: The enormous tides in the Bay of Fundy. These great tides appear in some parts of the Bay as a mole, or wave. Tides as great as 50 to 55 feet are not unusual in many areas of the bay. The solution to this would be a lock canal of unusual type, particularly in view of the short distance involved.

• **Hardly new**—The idea that a 20-mile ship canal through the Chignecto peninsula would be a good one goes as far back as the reign of King Louis XIV, of France.

In 1686, a special commissioner for the King (in what was then "New France") wrote in formal language:

"There are only four leagues to be traversed by land to go from French Bay (Sackville) to Baie Verte, and the portage may be easily cut through by canal, since all the land is very low. . . . If the sea once passed through, it would make in a very short time, a very fine river, through which ships from Quebec could easily pass."

King Louis didn't take up the suggestion of his representative, (Jacques de Meulles)—a couple of wars intervened—but the discussion has persisted ever since.

Nine formal Canadian government commissions have studied and re-studied the proposal since 1822, mustering on their rolls some of the best engineering minds of the world. None have found the project impossible, though many brought objections (mostly financial) in their final reports.

• **Almost had it**—In 1873, for example, the government of Sir John A. Macdonald actually called for bids (for a relatively small canal) but no real work on the project was done.

One of the early Commissions of Investigation said that the canal is "inseparately connected with intercolonial trade". The most exhaustive study of the project was probably that of the last commission, headed by Dr. Arthur Surveyer, prominent consulting engineer of Montreal.

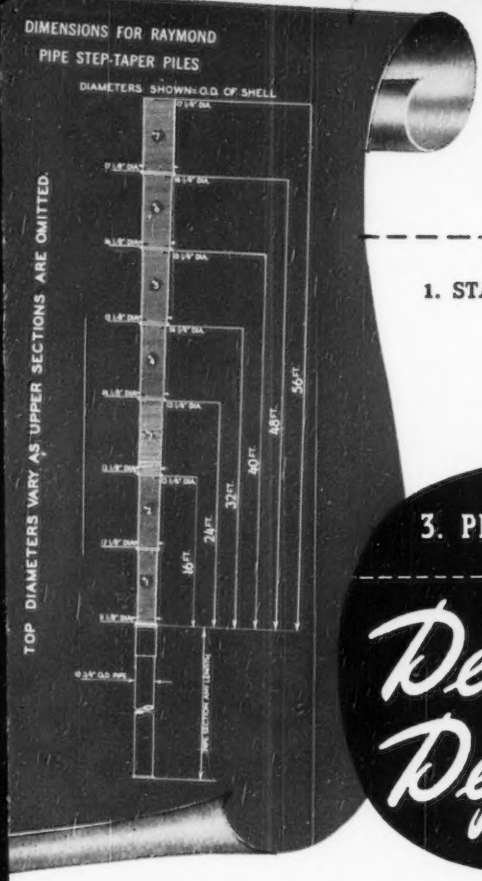
After reviewing all the facts, this commission stated that "having regard to transport facilities already available in the Maritime area, we cannot see where any interest would suffer were the Chignecto canal permitted to stand in abeyance until it can be further examined in the light of future developments in Canada's economic situation." This was in 1931, during the great depression. By 1950, Maritime residents were urging that the proposal be brought up again.

• **Governments in Favor** – The premiers and cabinets of the Maritimes brought in outright requests for the federal government to start work on the Canal.

Reflecting the importance with which the Dominion Government views the delegation was the presence of eleven members of the federal cabinet at the meeting with Prime Minister St. Laurent.

In typically cautious fashion, however, Mr. St. Laurent told the delegates that the cost of canals doesn't end with their construction. Maintenance costs, as well, must be considered, he said. However, he promised that the matter would be carefully studied in relation to plans for tidal power development now under consideration in the Bay of Fundy.

(The ill-fated Passamaquoddy tidal power project, started by the U. S. and Canada in Passamaquoddy Bay at the lower end of the Bay of Fundy, has been under serious consideration by the Canadian government recently. U. S. attempts to complete the project have apparently been abandoned, despite several sporadic attempts to reinstate it.)



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3. PIPE STEP-TAPER PILES

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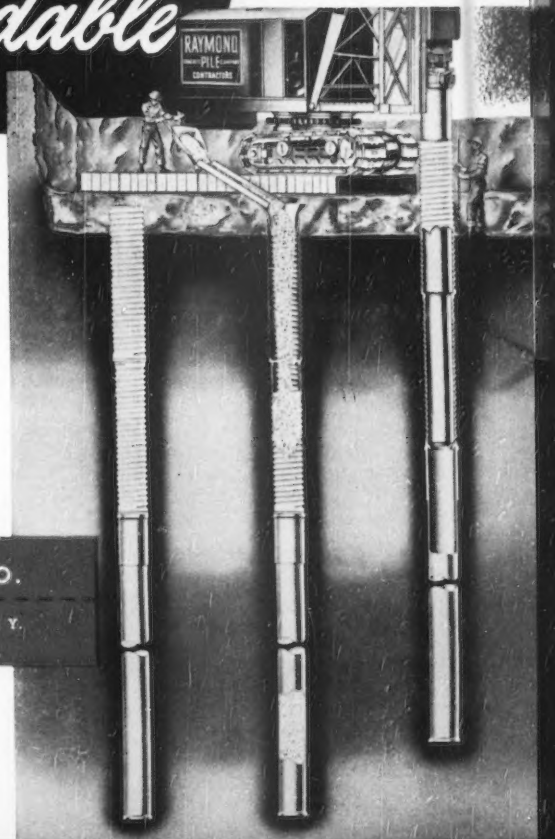
At the right, the pipe step-taper pile is being driven with the rigid steel mandrel. In the center the shell and pipe are being filled with concrete after having been driven to satisfactory resistance and inspected. At the left is a completed pipe step-taper pile.



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